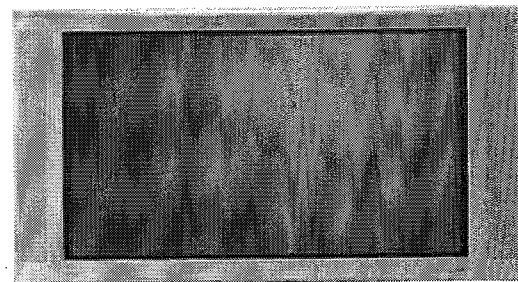


Service Service Service



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Service Manual

Contents Page

1. Technical Specifications, Connections, and Chassis Overview	2
2. Safety Instructions, Warnings, and Notes	4
3. Directions for Use	5
4. Mechanical Instructions	6
5. Service Modes, Error Codes, and Fault Finding	9
6. Block Diagrams, Testpoint Overviews, and Waveforms	
Wiring Diagram	15
Block Diagram Supply and Standby	16
Testpoint Overview Supply and Standby	17
Block Diagram Audio and Video	18
Block Diagram Audio and Video	19
Testpoint Overview SSB (Top Side)	20
I2C IC Overview	21
Supply Voltage Overview	22
7. Circuit Diagrams and PWB Layouts	
SSB: Tuner and VIF	(A1) 23 40-49
SSB: Histogram and Hercules	(A2) 24 40-49
SSB: Histogram and Hercules	(A3) 25 40-49
SSB: Audio Delay line (Lip sync)	(A4) 26 40-49
SSB: Audio Amplifier	(A5) 27 40-49
SSB: TV Supply	(A6) 28 40-49
SSB: Scaler	(A7) 29 40-49
SSB: Scaler Supply	(A8) 30 40-49
SSB: Scaler Interface	(A9) 31 40-49
SSB: SDRAM	(A10) 32 40-49
SSB: Flash / Control	(A11) 33 40-49
SSB: HDMI	(A12) 34 40-49
SSB: PCHD MUX	(A13) 35 40-49
SSB: Supply	(A14) 36 40-49
SSB: DC-DC Converter	(A15) 37 40-49
SSB: PCHD IO	(A16) 38 40-49
SSB: Rear IO Scart	(A17) 39 40-49

Contents Page

PSU (30-32"): Mains Filter and Standby	(AS1) 50	52-55
PSU (30-32"): Supply	(AS2) 51	52-55
Side I/O Panel	(D) 56	57
Top Control Panel	(E) 58	59
LED and Switch Panel	(J) 60	61
LCD Standby Audio Panel: Connections	(SA1) 62	65-67
LCD Standby Audio Panel: Standby	(SA2) 63	65-67
LCD Standby Audio Panel: Audio	(SA3) 64	65-67
8. Alignments		69
9. Circuit Descriptions, Abbreviation List, and IC Data Sheets		73
Abbreviation list		80
IC Data Sheets		83
10. Spare Parts List		86
11. Revision List		93

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connection Overview
- 1.3 Chassis Overview

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	: DV-LCD-IPS
Screen size	: 15.9
Resolution (HxV pixels)	: 1280x768 (WXGA)
Contrast ratio	: 350:1
Light output (cd/m ²)	: 450
Viewing angle (HxV deg.)	: 176x176
Tuning system	: PLL
Colour systems	: PAL B/G, D/K, I
	: SECAM B/G, D/K, L/L'
Video playback	: NTSC 4.43/3.58,
	: NTSC Play Back,
	: PAL 60,
	: PAL B/G Play Back,
	: SECAM Play Back
Channel selections	: 100 presets
	: UVSH
Supported formats	: VGA (640x480)
	: VGA (720x400)
	: VGA (640x350)
	: MAC (640x480)
	: MAC (832x624)
	: SVGA (800x600)
	: XWGA (1024x768)
	: WXGA (1280x768)

1.1.2 Sound

Sound systems	: BI NICAM B/G
	: 2CS B/G
	: NICAM B/G (5.5-5.85)
	: NICAM D/K (6.5-5.85)
	: NICAM I (6.0-6.52)
	: NICAM L (6.5-5.85)
	: FM/FM (5.5-5.74 B/G)
Maximum power (W _{RMS})	: 2 x 10

1.1.3 Miscellaneous

Power supply:	
- Mains voltage (V _{AC})	: 220 - 240
- Mains frequency (Hz)	: 50 / 60

Ambient conditions:	
- Ambient temperature (°C)	: +5 to +40
- Maximum humidity	: 90% R.H.

Power consumption	
- Normal operation (W)	: 185
- Stand-by (W)	: < 2

1.2 Connection Overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Rear Connections

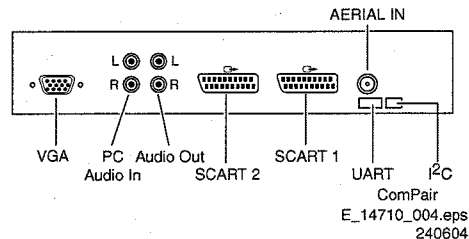


Figure 1-1 Rear connections

VGA: Video RGB - In

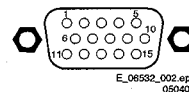


Figure 1-2 VGA Connector

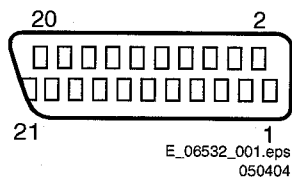
1	- Video Red	0.7 V _{PP} / 75 ohm	⊕
2	- Video Green	0.7 V _{PP} / 75 ohm	⊕
3	- Video Blue	0.7 V _{PP} / 75 ohm	⊕
4	- n.c.		
5	- Ground	Gnd	⊖
6	- Ground Red	Gnd	⊖
7	- Ground Green	Gnd	⊖
8	- Ground Blue	Gnd	⊖
9	- +5V_DC	+5 V _{DC}	⊕
10	- Ground_Sync	Gnd	⊖
11	- n.c.		
12	- DDC_SDA	DDC data	⊕
13	- H-sync	0 - 5 V	⊕
14	- V-sync	0 - 5 V	⊕
15	- DDC_SCL	DDC clock	⊕

Cinch: PC Audio - In

Rd	- Audio - R	0.5 V _{RMS} / 10 kohm	⊕
Wh	- Audio - L	0.5 V _{RMS} / 10 kohm	⊕

Cinch: Audio - Out

Rd	- Audio - R	0.5 V _{RMS} / 10 kohm	⊕
Wh	- Audio - L	0.5 V _{RMS} / 10 kohm	⊕

SCART 1: Video RGB/YUV-In, CVBS-In/Out, Audio-In/Out**Figure 1-3 SCART connector**

1	- Audio R	0.5 V _{RMS} / 1 kohm	⊕
2	- Audio R	0.5 V _{RMS} / 10 kohm	⊕
3	- Audio L	0.5 V _{RMS} / 1 kohm	⊕
4	- Ground Audio	Gnd	⊕
5	- Ground Blue	Gnd	⊕
6	- Audio L	0.5 V _{RMS} / 10 kohm	⊕
7	- Video Blue/U	0.7 V _{PP} / 75 ohm	⊕
8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Ground Green	Gnd	⊕
10	- n.c.		⊕
11	- Video Green/Y	0.7 or 1 V _{PP} / 75 ohm	⊕
12	- n.c.		⊕
13	- Ground Red	Gnd	⊕
14	- n.c.		⊕
15	- Video Red/V	0.7 V _{PP} / 75 ohm	⊕
16	- FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	⊕
17	- Ground Video	Gnd	⊕
18	- Ground FBL	Gnd	⊕
19	- Video CVBS	1 V _{PP} / 75 ohm	⊕
20	- Video CVBS	1 V _{PP} / 75 ohm	⊕
21	- Shield	Gnd	⊕

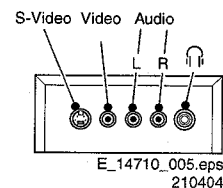
SCART 2: Video CVBS/YC - In/Out, Audio - In/Out

1	- Audio R	0.5 V _{RMS} / 1 kohm	⊕
2	- Audio R	0.5 V _{RMS} / 10 kohm	⊕
3	- Audio L	0.5 V _{RMS} / 1 kohm	⊕
4	- Ground Audio	Gnd	⊕
5	- Ground Blue	Gnd	⊕
6	- Audio L	0.5 V _{RMS} / 10 kohm	⊕
7	- Video C	0.7 V _{PP} / 75 ohm	⊕

8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Ground Green	Gnd	⊕
10	- Easylink P50	0 - 5 V / 4.7 kohm	⊕
11	- n.c.		⊕
12	- n.c.		⊕
13	- Ground Red	Gnd	⊕
14	- Ground P50	Gnd	⊕
15	- Video C	0.7 V _{PP} / 75 ohm	⊕
16	- n.c.		⊕
17	- Ground Video	Gnd	⊕
18	- n.c.		⊕
19	- Video CVBS	1 V _{PP} / 75 ohm	⊕
20	- Video Y/CVBS	1 V _{PP} / 75 ohm	⊕
21	- Shield	Gnd	⊕

Aerial - In

- IEC-type Coax, 75 ohm

1.2.2 Side I/O connections**Figure 1-4 Side I/O connections****SVHS (Hosiden): Video Y/C - In**

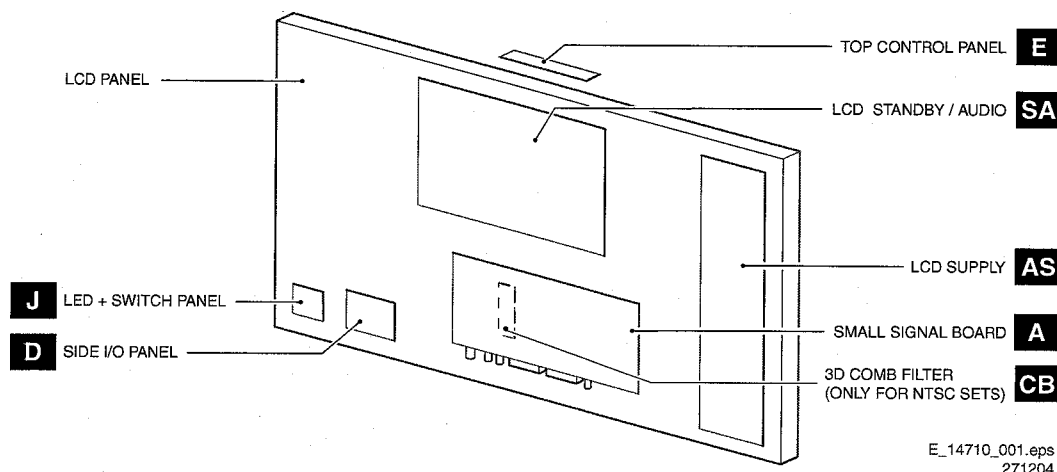
1	- Ground Y	Gnd	⊕
2	- Ground C	Gnd	⊕
3	- Video Y	1 V _{PP} / 75 ohm	⊕
4	- Video C	0.3 V _{PP} / 75 ohm	⊕

Cinch: Video CVBS - In, Audio - In

Ye	- Video CVBS	1 V _{PP} / 75 ohm	⊕
Wh	- Audio L	0.5 V _{RMS} / 10 kohm	⊕
Rd	- Audio R	0.5 V _{RMS} / 10 kohm	⊕

Mini Jack: Audio Head phone - Out

Bk - Head phone 32 - 600 ohm / 10 mW

1.3 Chassis Overview**Figure 1-5 Chassis Overview**

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Warnings
- 2.3 Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Connect the set to the mains via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the strain relief of the mains cord for proper function.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets which have a mains isolated power supply):
 1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
 2. Set the mains switch to the "on" position (keep the mains cord unplugged!).
 3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
 4. Switch "off" the set, and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ) . Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground () , or hot ground () , depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar

signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).

- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in stand-by () . These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the "double-D symbol", are trademarks of Dolby Laboratories.

2.3.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.3.3 Rework on BGA (Ball Grid Array) ICs

General

Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device Removal

As is the case with any component that, it is essential when removing an (LF)BGA, the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB. To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area Preparation

When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA. Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.

After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA. **Note:** Do not apply solder paste, as this has shown to result in problems during re-soldering.

Device Replacement

The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

More Information

For more information on how to handle BGA devices, visit this URL: <http://www.atyourservice.ce.philips.com> (needs subscription). After login, select "Magazine", then go to "Workshop Information". Here you will find information on how to deal with BGA-ICs.

2.3.4 Lead Free Solder

Philips CE is going to produce lead-free sets (PBF) from 1.1.2005 onwards.



Figure 2-1 Lead-free logo

This sign normally has a diameter of 6 mm, but if there is less space on a board also 3 mm is possible.

Regardless of this logo (is not always present), one must treat all sets from this date onwards according to the following rules.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able
 - To reach at least a solder-tip temperature of 400°C.
 - To stabilise the adjusted temperature at the solder-tip.
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C - 380°C is reached and stabilised at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of

tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch "off" unused equipment or reduce heat.

- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to avoid mixed regimes. If not to avoid, clean carefully the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals. Not listed standard material (commodities) has to be purchased at external companies.
- Special information for lead-free BGA ICs: these ICs will be delivered in so-called "dry-packaging" to protect the IC against moisture. This packaging may only be opened short before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-)pressure inside the body. If the packaging was opened before usage, the IC has to be heated up for some hours (around 90°C) for drying (think of ESD-protection!).
Do not re-use BGAs at all!
- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.

In case of doubt whether the board is lead-free or not (or with mixed technologies), you can use the following method:

- Always use the highest temperature to solder, when using SAC305 (see also instructions below).
- De-solder thoroughly (clean solder joints to avoid mix of two alloys).

Caution: For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website www.atyourservice.ce.philips.com (needs subscription, but is not available for all regions) You will find this and more technical information within the "Magazine", chapter "Workshop information".

For additional questions please contact your local repair help desk.

2.3.5 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions - reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:

<http://www.philips.com/support>
<http://www.p4c.philips.com>

4. Mechanical Instructions

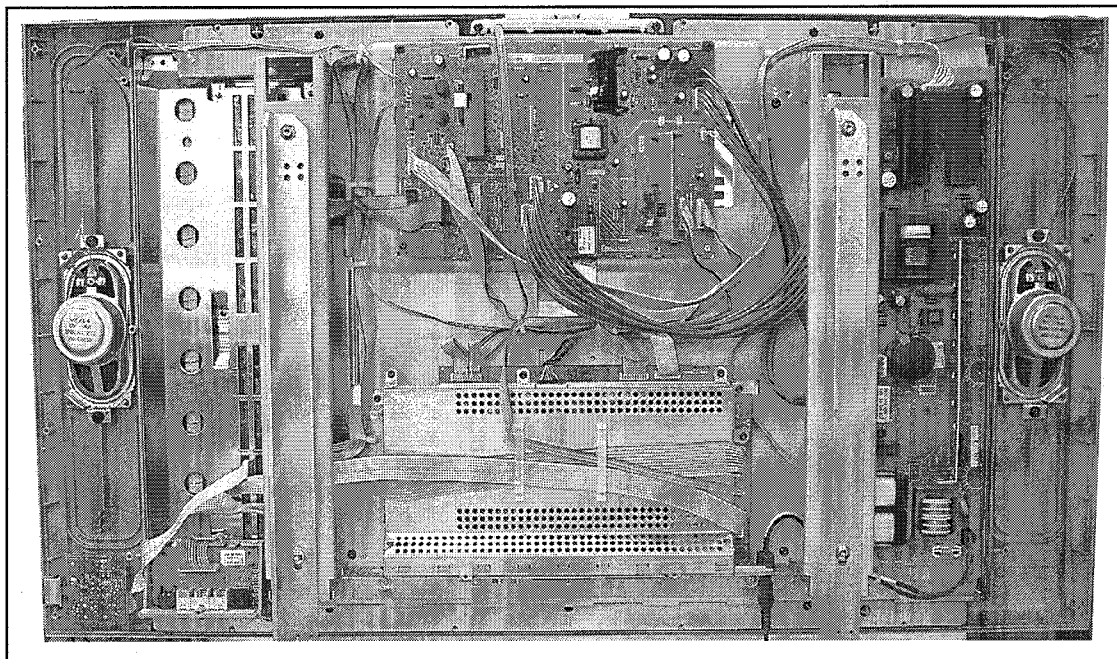
Index of this chapter:

- 4.1 Cable Dressing
- 4.2 Service Position
- 4.3 Assy/Panel Removal
- 4.4 Set Re-assembly

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order.

4.1 Cable Dressing



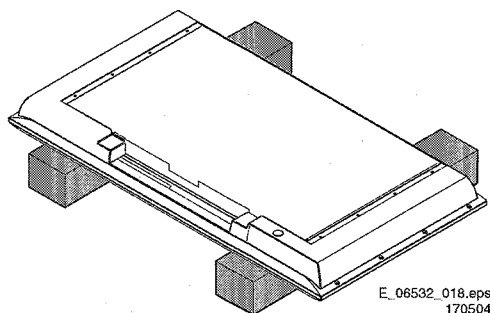
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Figure 4-1 Cable dressing

4.2 Service Position

First, put the TV set in its service position. Therefore, place it upside down on a table top (use a protection sheet or foam bars).

4.2.1 The Foam Bars

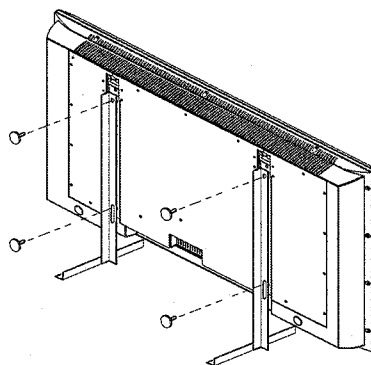


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170504

Figure 4-2 Foam bars

The foam bars (order code 3122 785 90580) can be used for all types and sizes of Flat TVs. By laying the plasma or LCD TV flat on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By first placing a mirror flat on the table under the TV you can easily see if something is happening on the screen.

4.2.2 The Aluminium Stands



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170504

Figure 4-3 Aluminium stands

The aluminium stands (order code 3122 785 90480) can also be used to do measurements and alignments. The stands are also very suitable to perform duration tests. With this stands the set does not take much space, has no risk of over heating, and/or falling. The stands can be mounted and removed quickly and easily with use of the provided screws, which can be tightened and loosened manually without the use of tools.

Caution: Only use the screws provided, otherwise it is possible to damage the monitor inside.

4.3 Assy/Panel Removal

4.3.1 Rear Cover

Warning: Disconnect the mains power cord before you remove the rear cover.

1. Remove the screws, which secure the rear cover. The screws are located at the top, bottom, left and right sides; next to the Side/IO connections and SCART connection. There are also three deeper located screws next to the stands.
2. Lift the rear cover from the cabinet. Make sure that wires and flat foils are not damaged during cover removal.

4.3.2 Side I/O Panel

1. Disconnect the cable from the panel.
2. To replace the complete bracket, remove the two fixation screws on either side of the panel.
3. Release the two fixation clamps and lift the panel out of the bracket.

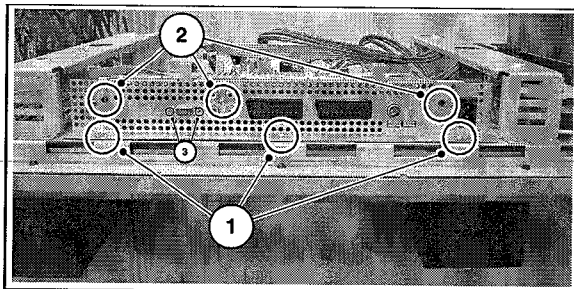
4.3.3 LED + Switch Panel

1. Remove the two fixation screws.
2. Disconnect the cable from the rear of the panel.

4.3.4 Top Control Panel

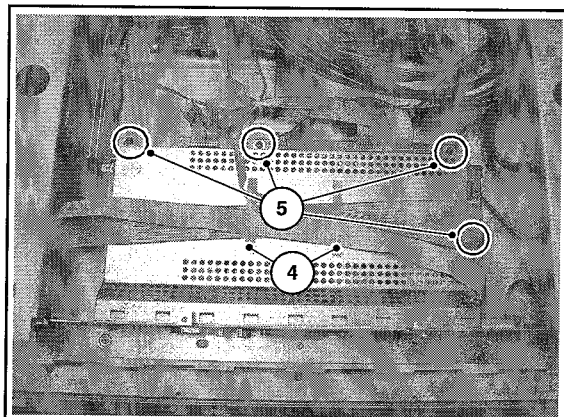
1. Remove the two fixation screws.
2. Release the two fixation clamps and lift the panel out of the bracket.

4.3.5 Small Signal Board (SSB)



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210404

Figure 4-4 SSB Connector plate



E_14710_003.eps
210404

Figure 4-5 Cover shield of the SSB

1. Remove the middle fixation screw (1) from the bottom side of the connector plate (as this holds the SSB bracket).
Note: Sometimes it is easier to loosen the complete connector plate and remove it together with the SSB.
2. Remove all connector fixation screws (2) from the front side of the connector plate.
3. Remove the two female screw locks (3) of the VGA connector.
4. Release the plastic cable clips (4) on the shielding and disconnect all cables from the SSB.
Note: Be careful with the fragile LVDS connector on the SSB.
5. Now, completely remove the SSB (together with all the shieldings) from the set.
6. Once the SSB is out, remove the fixation screws (5) from the shielding.
7. Remove the shielding, it hinges at the left side (acc. photo).
8. Remove the fixation screws that hold the panel, and take out the panel.

Notes:

- Pay special attention to the EMC foam on the SSB shielding. These must be replaced in their initial positions during set re-assembly.
- Insulate the tuner pins, so they cannot touch the shielding (see also figure "SDM Service jumper" in Chapter 5).

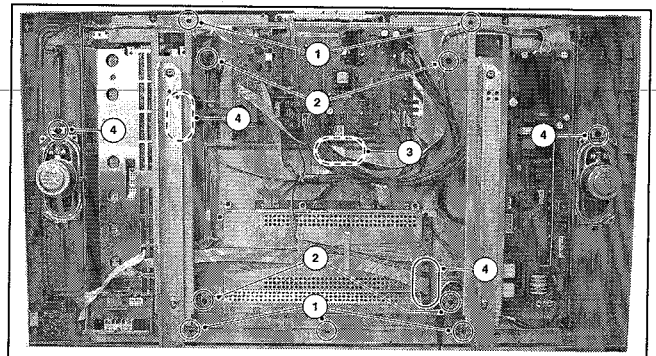
4.3.6 LCD Supply Panel

1. Disconnect all cables from the panel.
2. Remove the fixation screws from the panel.

4.3.7 LCD Stand-by/Audio Panel

1. Disconnect all cables from the panel.
2. Remove the fixation screws from the panel.

4.3.8 LCD Panel



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Figure 4-6 LCD panel disassembly

1. Remove the T10 screws (1) from the mounting frame.
2. Remove all mounting LCD panel T20 screws (2).
3. **Important:** Unplug the LVDS connector (3) at the LCD panel. **Be careful,** as this is a very fragile connector!
4. Unplug the following connectors (4):
 - LCD back light (disconnect at the LCD side)
 - Loudspeaker (easiest to disconnect at the speaker and to release the cable holders a little).
 - Top Control cable (disconnect at SSB side).
 - Cable between LED/Switch panel and SSB.
5. Lift the metal frame (together with all PWBs) from the LCD panel.
6. After removal of the frame, you can lift the LCD display from the set.

4.4 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position. See figure "Cable dressing".
- Pay special attention not to damage the EMC foams at the SSB shielding. Make sure that the EMC foams are put correctly in place.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.1 Test Points
- 5.2 Service Modes
- 5.3 Problems and Solving Tips Related to CSM
- 5.4 ComPair
- 5.5 Error Codes
- 5.6 The Blinking LED Procedure
- 5.7 Fault Finding and Repair Tips

5.1 Test Points

This chassis is equipped with test points in the service printing. In the schematics test points are identified with a rectangle box around Fxxx or Ixxx. These test points are specifically mentioned in the service manual as "half moons" with a dot in the centre.

Perform measurements under the following conditions:

- Television set in Service Default Alignment Mode.
- Video input: colour bar signal.
- Audio input: 3 kHz left channel, 1 kHz right channel.

5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offers several features for the service technician, while the Customer Service Mode (CSM) is used for communication between the call centre and the customer.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version read-out for all chassis.

Minimum requirements for ComPair: a Pentium processor, a Windows OS, and a CD-ROM drive (see also paragraph "ComPair").

5.2.1 Service Default Mode (SDM)

Purpose

- To create a predefined setting for measurements.
- To override software protections.
- To start the blinking LED procedure.
- To inspect the error buffer.
- To check the life timer.

Specifications

Table 5-1 SDM default settings

Region	Freq. (MHz)	Default system
Europe, AP-PAL/Multi	475.25	PAL B/G
NAFTA, AP-NTSC, LATAM	61.25 (ch. 3)	NTSC M

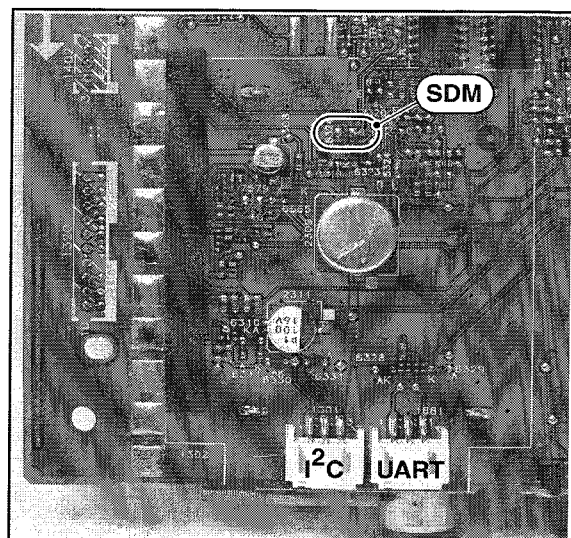
- All picture settings at 50% (brightness, colour contrast, hue).
- Bass, treble and balance at 50%; volume at 25%.
- All service-unfriendly modes (if present) are disabled. The service unfriendly modes are:
 - Timer / Sleep timer.
 - Child / parental lock.
 - Blue mute.
 - Hotel / hospital mode.
 - Auto shut off (when no "IDENT" video signal is received for 15 minutes).
 - Skipping of non-favourite presets / channels.
 - Auto-storage of personal presets.
 - Auto user menu time-out.
 - Auto Volume Levelling (AVL).

How to enter

To enter SDM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: "062596" directly followed by the MENU button (do not allow the OSD display to time out between entries while keying the sequence).
- Short SDM jumper (item 4022, see Figure "Service jumper") on the TV board and apply AC Power. Remove the short after start-up.

Caution: Entering SDM by shorting "Service" jumpers will override the software protections. Do this only for a short period. **When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.**



E_14710_062.eps
260804

Figure 5-1 SDM Service jumper

After entering SDM, the following screen is visible, with SDM in the upper right corner of the screen to indicate that the television is in Service Default Alignment Mode.

```
00022 LC42EP1 2.03/S42GV1 2.02  SDM
ERR 0 0 0 0 0
OP 000 057 140 032 120 128 000
```

E_14710_006.eps
240804

Figure 5-2 SDM menu (example from LC4.2E)

How to navigate

When you press the MENU button on the remote control, the set will switch on the normal user menu in the SDM mode.

How to exit

Switch the set to STANDBY by pressing the POWER button on the remote control transmitter.

If you turn the television set off by removing the mains (i.e., unplugging the television) or by using the POWER button on the TV set, the television set will remain in SDM when mains is re-applied, and the error buffer is not cleared.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications

- Operation hours counter (maximum five digits displayed).
- Software version, Error codes, and Option settings display.
- Error buffer clearing.
- Option settings.
- Software alignments (Tuner, White Tone, Geometry, and Audio).
- NVM Editor.
- ComPair Mode switching.

How to enter

Press the following key sequence on the remote control transmitter: "062596" directly followed by the OSD/STATUS/INFO button (do not allow the OSD display to time out between entries while keying the sequence).

After entering SAM, the following screen is visible, with SAM in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

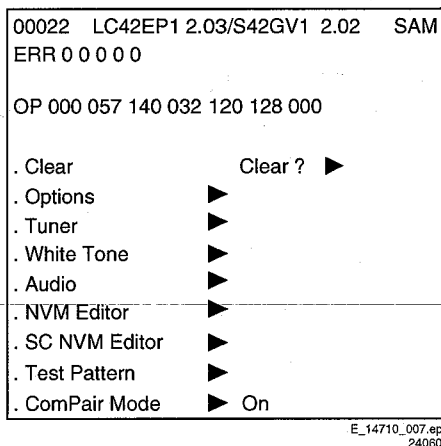


Figure 5-3 SAM menu (example from LC4.2E)

Menu explanation

1. **LLLLL**. This represents the run timer. The run timer counts normal operation hours (including "on/off" switching), but does not count stand-by hours.
2. **AAAABCD-X.YY/EEEEEE_F.GG**. This is the software identification of the Main/Scaler microprocessor:
 - **A**= the chassis name.
 - **B**= the region: E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM.
 - **C**= the software diversity:
 - **Europe:** T= 1 pg TXT, F= Full TXT, V= Voice ctrl.
 - **LATAM and NAFTA:** N= Stereo non-dBx, S= Stereo dBx.
 - **Asian Pacific:** T= TXT, N= non-TXT, C= NTSC.
 - **ALL regions:** M= mono, D= DVD, P= Pixel Plus, Q= Mk2.
 - **D**= the language cluster number.
 - **X**= the Main software version number (updated with a major change that is incompatible with previous versions).

- **YY**= the sub software version number (updated with a minor change that is compatible with previous versions).
 - **EEEEEE**= the Scaler SW cluster
 - **F**= the Scaler SW version no.
 - **GG**= the sub-version no.
3. **SAM**. Indication of the Service Alignment Mode.
 4. **Error Buffer (ERR)**. Shows all errors detected since the last time the buffer was erased. Five errors possible.
 5. **Option Bytes (OP)**. Shows all option settings. See "Options" in the Alignments section for a detailed description. Seven codes are available.
 6. **Clear**. Erases the contents of the error buffer. Select the CLEAR menu item and press the CURSOR RIGHT key. The content of the error buffer is cleared.
 7. **Options**. Used to set the option bits. See "Options" in the Alignments section for a detailed description.
 8. **Tuner**. Used to align the tuner. See "Tuner" in the Alignments section for a detailed description.
 9. **White Tone**. Used to align the white tone. See "White Tone" in the Alignments section for a detailed description.
 10. **Audio**. No audio alignment is necessary for this television set.
 11. **NVM Editor**. Can be used to change the NVM data in the television set.
 12. **SC NVM Editor**. Can be used to edit Scaler NVM.
 13. **Test Pattern**. For future use.
 14. **ComPair**. Can be used to switch the television to "In System Programming" (ISP) mode, for software uploading via ComPair.
Caution: When this mode is selected without ComPair connected, the TV will be blocked. Remove the AC power to reset the TV.

How to navigate

- In SAM, select menu items with the CURSOR UP/DOWN keys on the remote control transmitter. The selected item will be highlighted. When not all menu items fit on the screen, use the CURSOR UP/DOWN keys to display the next / previous menu items.
- With the CURSOR LEFT/RIGHT keys, it is possible to:
 - Activate the selected menu item.
 - Change the value of the selected menu item.
 - Activate the selected submenu.
- In SAM, when you press the MENU button twice, the set will switch to the normal user menus (with the SAM mode still active in the background). To return to the SAM menu press the MENU button again.
- When you press the MENU key in while in a submenu, you will return to the previous menu.

How to store SAM settings

To store the settings changed in SAM mode, leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set.

How to exit

Switch the set to STANDBY by pressing the POWER button on the remote control transmitter or on the television set.

5.2.3 Customer Service Mode (CSM)

Purpose

The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.

The CSM is a read-only mode; therefore, modifications are not possible in this mode.

How to enter

To enter CSM, press the following key sequence on the remote control transmitter: "123654" (do not allow the OSD display to time out between entries while keying the sequence).

Upon entering the Customer Service Mode, the following screen will appear:

```

1 00022 LC42EP1 2.03/S42GV1 2.02 CSM
2 CODES 0 0 0 0 0
3 OP 000 057 140 032 120 128 000
4
5
6 NOT TUNED
7 PAL
8 STEREO
9 CO 50 CL 50 BR 50
0 AVL Off

```

E_14710_008.eps
240604

Figure 5-4 CSM menu (example from LC4.2E)

Menu explanation

1. Indication of the decimal value of the operation hours counter, Main/Scaler software version (see "Service Alignment Mode" for an explanation), and service mode (CSM= Customer Service Mode).
2. Displays the last five errors detected in the error code buffer.
3. Displays the option bytes.
4. Displays the type number version of the set (option).
5. Reserved.
6. Indicates the television is receiving an "IDENT" signal on the selected source. If no "IDENT" signal is detected, the display will read "NOT TUNED"
7. Displays the detected Colour system (e.g. PAL/NTSC).
8. Displays the detected Audio (e.g. stereo/mono).
9. Displays the picture setting information.
10. Displays the sound setting information.

How to exit

To exit CSM, use one of the following methods:

- Press the MENU, STATUS (or EXIT/INFO/[i+]), or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 Problems and Solving Tips Related to CSM

5.3.1 Picture Problems

Note: The problems described below are all related to the TV settings. The procedures used to change the value (or status) of the different settings are described.

Picture too dark or too bright

If:

- The picture improves when you press the AUTO PICTURE button on the remote control transmitter, or
- The picture improves when you enter the Customer Service Mode,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.

2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the CURSOR UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the CURSOR LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the CURSOR UP/DOWN keys (if necessary) to select BRIGHTNESS.
6. Press the CURSOR LEFT/RIGHT keys to increase or decrease the BRIGHTNESS value.
7. Use the CURSOR UP/DOWN keys to select PICTURE.
8. Press the CURSOR LEFT/RIGHT keys to increase or decrease the PICTURE value.
9. Press the MENU button on the remote control transmitter twice to exit the user menu.
10. The new PERSONAL preference values are automatically stored.

White line around picture elements and text

If:

The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the CURSOR UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the CURSOR LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the CURSOR UP/DOWN keys to select SHARPNESS.
6. Press the CURSOR LEFT key to decrease the SHARPNESS value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

Snowy picture

Check CSM line 6. If this line reads "Not Tuned", check the following:

- Antenna not connected. Connect the antenna.
- No antenna signal or bad antenna signal. Connect a proper antenna signal.
- The tuner is faulty (in this case line 2, the Error Buffer line, will contain error number 10). Check the tuner and replace/repair the tuner if necessary.

Black and white picture

If:

- The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the CURSOR UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the CURSOR LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the CURSOR UP/DOWN keys to select COLOUR.
6. Press the CURSOR RIGHT key to increase the COLOUR value.

7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

Menu text not sharp enough

If:

- The picture improves after you have pressed the AUTO PICTURE button on the remote control transmitter,

Then:

1. Press the AUTO PICTURE button on the remote control transmitter repeatedly (if necessary) to choose PERSONAL picture mode.
2. Press the MENU button on the remote control transmitter. This brings up the normal user menu.
3. In the normal user menu, use the CURSOR UP/DOWN keys to highlight the PICTURE sub menu.
4. Press the CURSOR LEFT/RIGHT keys to enter the PICTURE sub menu.
5. Use the CURSOR UP/DOWN keys to select PICTURE.
6. Press the CURSOR LEFT key to decrease the PICTURE value.
7. Press the MENU button on the remote control transmitter twice to exit the user menu.
8. The new PERSONAL preference value is automatically stored.

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I²C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I²C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the Force/SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial (or RS232) cable.

For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- Automatic (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I²C/UART level. ComPair can access the I²C/UART bus of the television. ComPair can send and receive I²C/UART commands to the micro controller of the television. In this way, it is possible for

ComPair to communicate (read and write) to devices on the I²C/UART buses of the TV-set.

- Manually (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the fault finding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the fault finding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of pre-sets.
- Managing of pre-set lists.
- Emulation of the (European) Dealer Service Tool (DST).
- If both ComPair and Force/SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.

Example: Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier.

- Click on the "Panel" hyperlink to automatically show the PWB with a highlighted capacitor C2568.
- Click on the "Schematic" hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 How To Connect

This is described in the chassis fault finding database in ComPair.

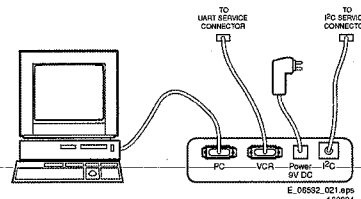


Figure 5-5 ComPair interface connection

5.4.4 How To Order

ComPair order codes (EU/AP/LATAM):

- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60070 (year 2002), 3122 785 60110 (year 2003 onwards).
- SearchMan32 CD (update): 3122 785 60080 (year 2002), 3122 785 60120 (year 2003), 3122 785 60130 (year 2004).
- ComPair firmware upgrade IC: 3122 785 90510.
- Transformer (non-UK): 4822 727 21632.
- Transformer UK: 4822 727 21633.
- ComPair interface cable: 3122 785 90004.
- ComPair interface extension cable: 3139 131 03791.
- ComPair UART interface cable: 3122 785 90630

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

5.5.1 How To Read The Error Buffer

You can read the error buffer in 3 ways:

- On screen via the SAM (if you have a picture).
Examples:
 - ERROR: 0 0 0 0 0: No errors detected
 - ERROR: 6 0 0 0 0: Error code 6 is the last and only detected error
 - ERROR: 9 6 0 0 0: Error code 6 was detected first and error code 9 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture). See "The Blinking LED Procedure".
- Via ComPair.

5.5.2 How To Clear The Error Buffer

The error code buffer is cleared in the following cases:

- By using the CLEAR command in the SAM menu:
 - To enter SAM, press the following key sequence on the remote control transmitter: "062596" directly followed by the OSD/STATUS button (do not allow the OSD display to time out between entries while keying the sequence).
 - Make sure the menu item CLEAR is highlighted. Use the CURSOR UP/DOWN buttons, if necessary.
 - Press the CURSOR RIGHT button to clear the error buffer. The text on the right side of the "CLEAR" line will change from "CLEAR?" to "CLEARED"
- If an error does not re-occur within 50 hours it is deleted from the error buffer.

5.5.3 Error Codes

In case of non-intermittent faults, write down the errors present in the error buffer and clear the error buffer before you begin the repair. This ensures that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error and not the actual cause of the problem (for example, a fault in the protection detection circuitry can also lead to a protection).

Table 5-2 Error code overview

Error	Device	Error description	Check item	Diagram
0	Not applicable	-	-	-
1	Not applicable	-	-	-
2	Not applicable	-	-	-
3	Not applicable	-	-	-
4	GM1501 Scaler Flash-ROM	I ² C error while communicating with the Genesis Scaler and/or Flash-ROM is faulty/empty	7401 7530	A7 A11
5	Not applicable	+5V protection	7930	A6
6	I ² C bus	General I ² C error	7011, 3088, 3096	A2
7	Not applicable	-	-	-
8	M24C32	I ² C error while communicating with the Scaler EEPROM	7531	A11
9	M24C16	I ² C error while communicating with the EEPROM	7099	A2
10	Tuner	I ² C error while communicating with the PLL tuner	1302, 3302, 3303, 3327	A1
11	Not applicable	-	-	-
12	Not applicable	-	-	-
13	Not applicable	-	-	-
14	K4D263238M	Read-write error with the Scaler SDRAM	7501	A10
15	TDA9178T/N1	I ² C error while communicating with Histogram	7560	A3

5.6 The Blinking LED Procedure

Using this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful when there is no picture.

When the SDM is entered, the front LED will blink the contents of the error-buffer:

- The LED blinks with as many pulses as the error code number, followed by a time period of 1.5 seconds, in which the LED is "off".
- Then this sequence starts is repeated.

Any RC5 command terminates this sequence.

Example of error buffer: 12 9 6 0 0

After entering SDM, the following occurs:

- 1 long blink of 5 seconds to start the sequence,
- 12 short blinks followed by a pause of 1.5 seconds,
- 9 short blinks followed by a pause of 1.5 seconds,
- 6 short blinks followed by a pause of 1.5 seconds,
- 1 long blink of 1.5 seconds to finish the sequence,
- The sequence starts again at 12 short blinks.

5.7 Fault Finding and Repair Tips

Notes:

- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.7.1 NVM Editor

In some cases, it can be handy if one directly can change the NVM contents. This can be done with the "NVM Editor" in SAM mode. With this option, single bytes can be changed.

Table 5-3 NVM editor overview

	Hex	Dec	Description
.ADR	0x000A	10	Existing value
.VAL	0x0000	0	New value
.Store	Store?		

5.7.2 Load default NVM values

In case a blank NVM is placed or when the NVM content is corrupted, default values can be downloaded into the NVM. After the default values are downloaded it will be possible to start up and to start aligning the TV set. This is no longer initiated automatically; to initiate the download the following action has to be performed:

1. Switch "off" the TV set via the AC Power switch.
2. Short circuit the SDM jumpers (keep short-circuited).
3. Press P+ or Ch+ on the local keyboard (and keep it pressed).
4. Switch on the TV set via the AC Power switch.
5. When the set has started, the P+/Ch+ button can be released and the short circuit of the SDM jumpers can be removed.
6. The red LED will be on continuously to indicate that the download is initiated (normally when SDM is activated the red LED will start with the Blinking LED sequence).
7. Wait +/- 30 s (time needed to download default values to the NVM).

5.7.3 Tuner and IF

No Picture in RF mode

1. Check whether picture is present in AV. If not, go to Video processing troubleshooting section.
2. If present, check that the Option settings are correct.
3. Check that all supply voltages are present.
4. Check if I²C lines are working correctly (3.3V).
5. Manually store a known channel and check if there is IF output at Tuner pin 11.
6. Feed in 105 dBuV at Tuner pin 11 and check whether there is RGB output from Video Processing IC. If yes, Tuner may be defect. Replace Tuner.

Required system is not selected correctly

1. Check whether a Service jumper (#4022, 0805 size) is present. If yes, remove it.

5.7.4 Video Processing

No power

1. Check +12 V and 3V3 at position 1910.
2. If no supply, check the connector 1910.
3. If it is correct, check the power supply board.

Power supply is correct but no green LED

1. Check if connectors 1005 and 1601 are properly inserted.
2. If yes, check if the 3V3 is present.

No picture display

1. Check the RGB signal.
2. If it is present, check 3-IC7016 (NE555).
3. If it has output, the problem is in SCALER part.
4. Otherwise, check H-out on pin 2 of NE555. If the input signal of pin 2 is present, but no output, the IC is defect.

Note:

- If the H-out (pin 67) doesn't have signal or the level is low, check the output of NE555 (pin 3) during start up.
- If the H-out (pin 67) has a signal (or has a signal for a very short time), change IC7016 (NE555).

No TV but PC is present

1. Check if HSYNC and VSYNC are present at pin 3 of 7017 and 7015.
2. If they are present, check RGB output.
3. If there is no RGB output, the IC TDA120xx can be defect.

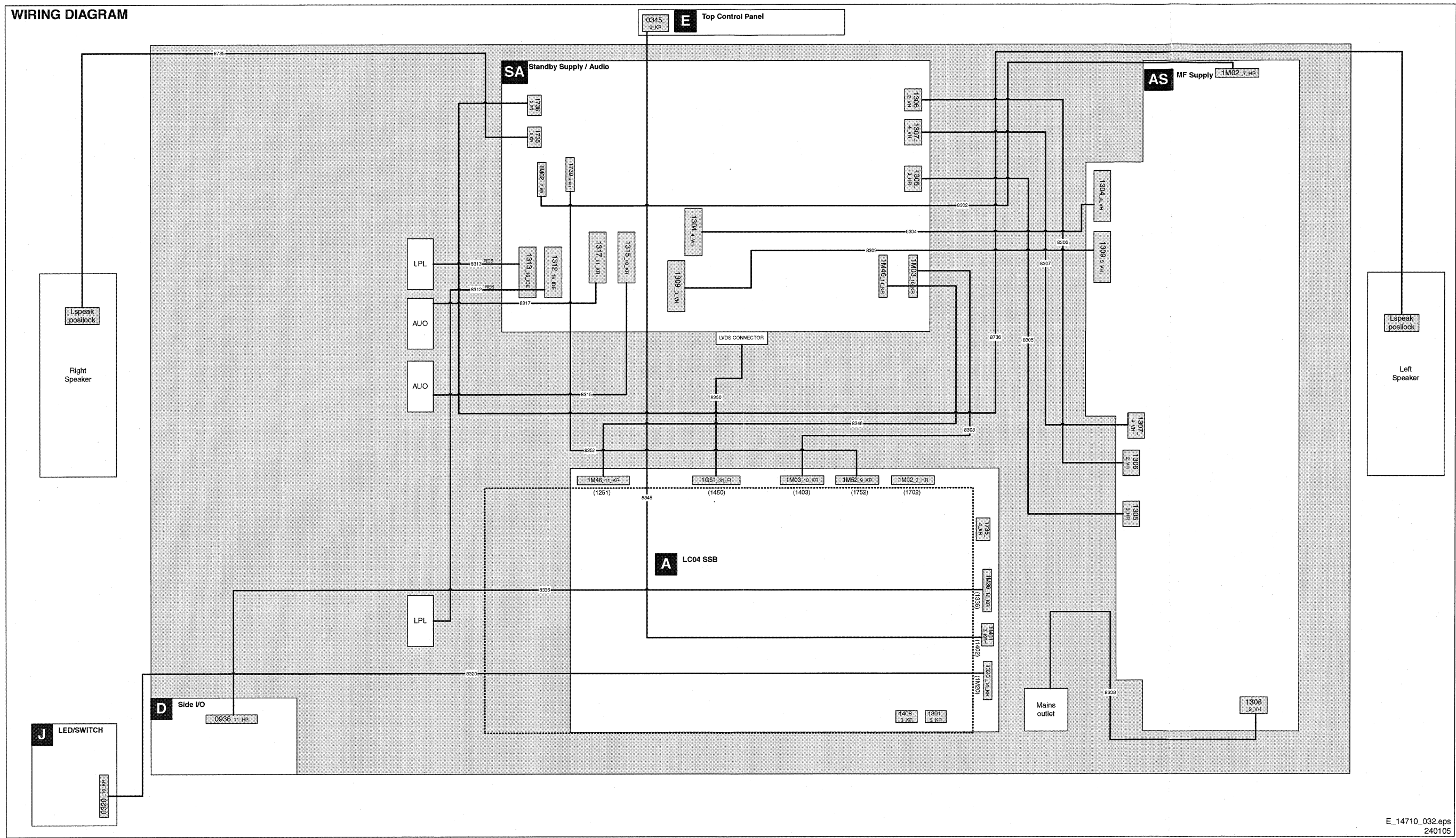
5.7.5 Power Supply

This power supply contains two fuses. One is near the AC Power (or mains) inlet connector 1308 and the other is near connector 1307.

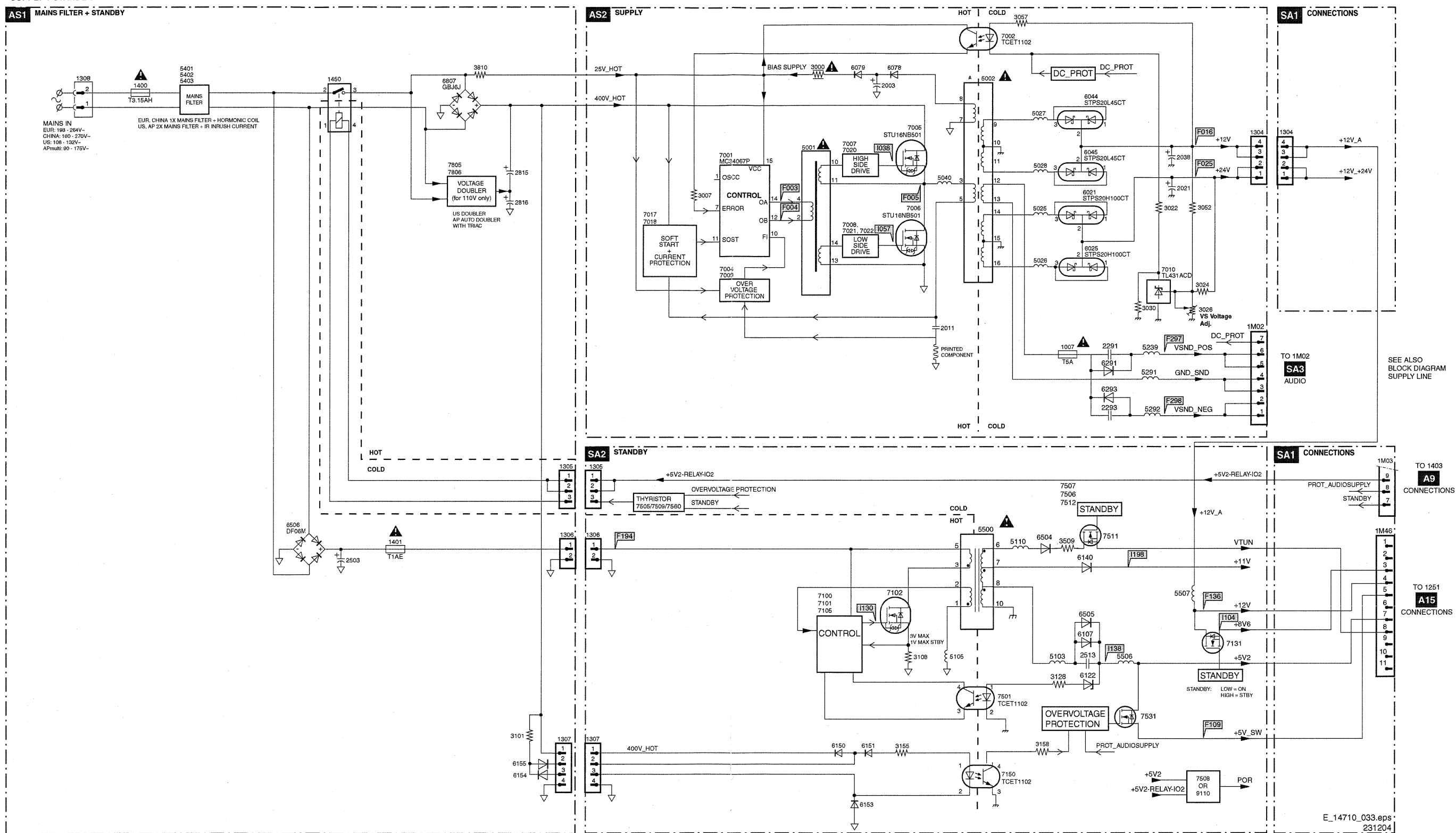
1. Check with power supply in "off" state by means of ohmic measurement.
2. Fuse 1400 may open in case of severe lightning strikes and/or failures in the power supply.
3. Fuses 1401 may open in case of a problem with the Stand-by Supply. Replacement of the fuse is needed, but not before the cause of the overload conditions is resolved.

6. Block Diagrams, Testpoint Overviews, and Waveforms

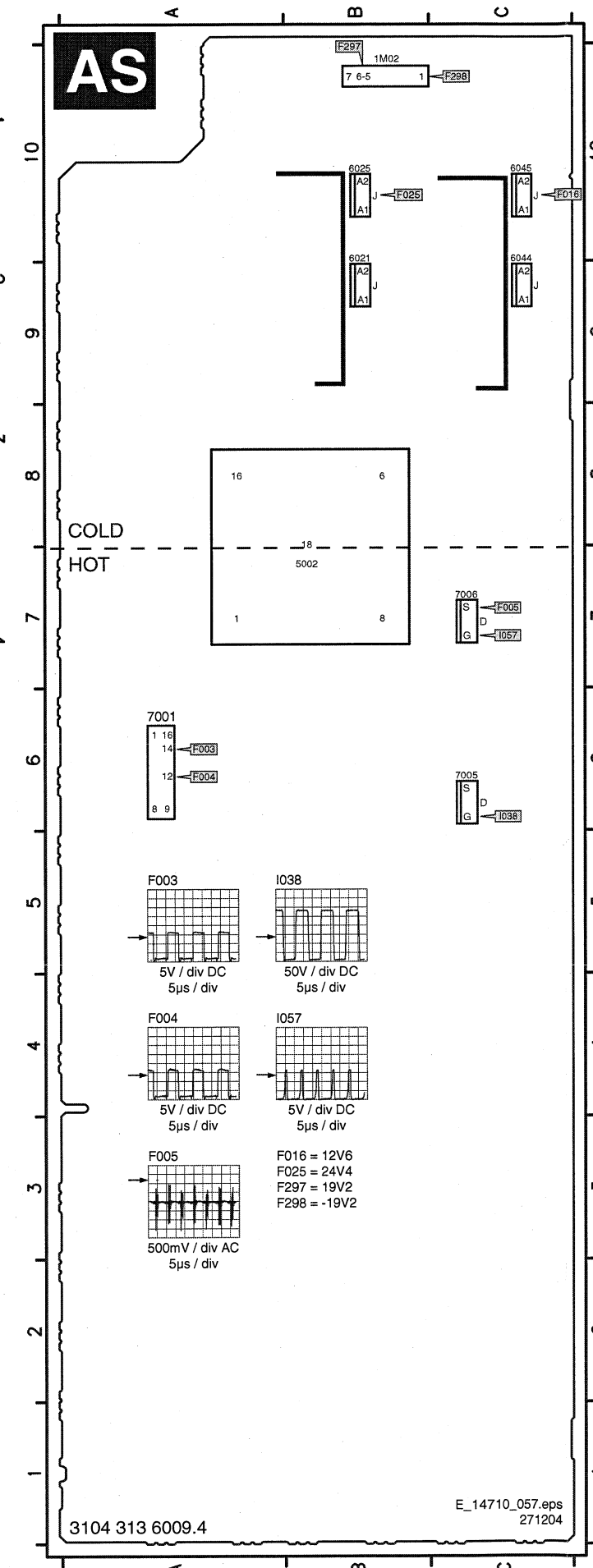
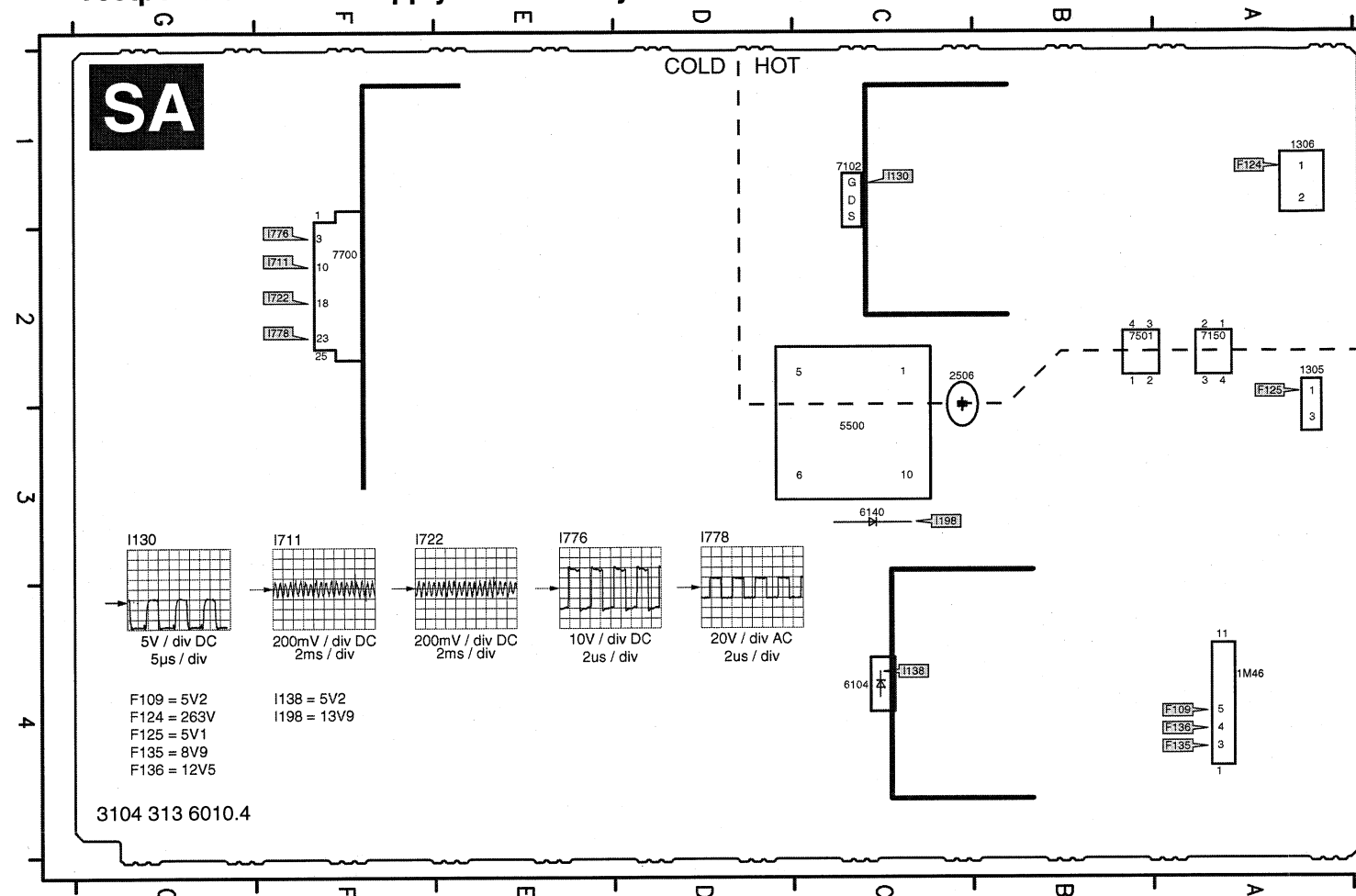
Wiring Diagram



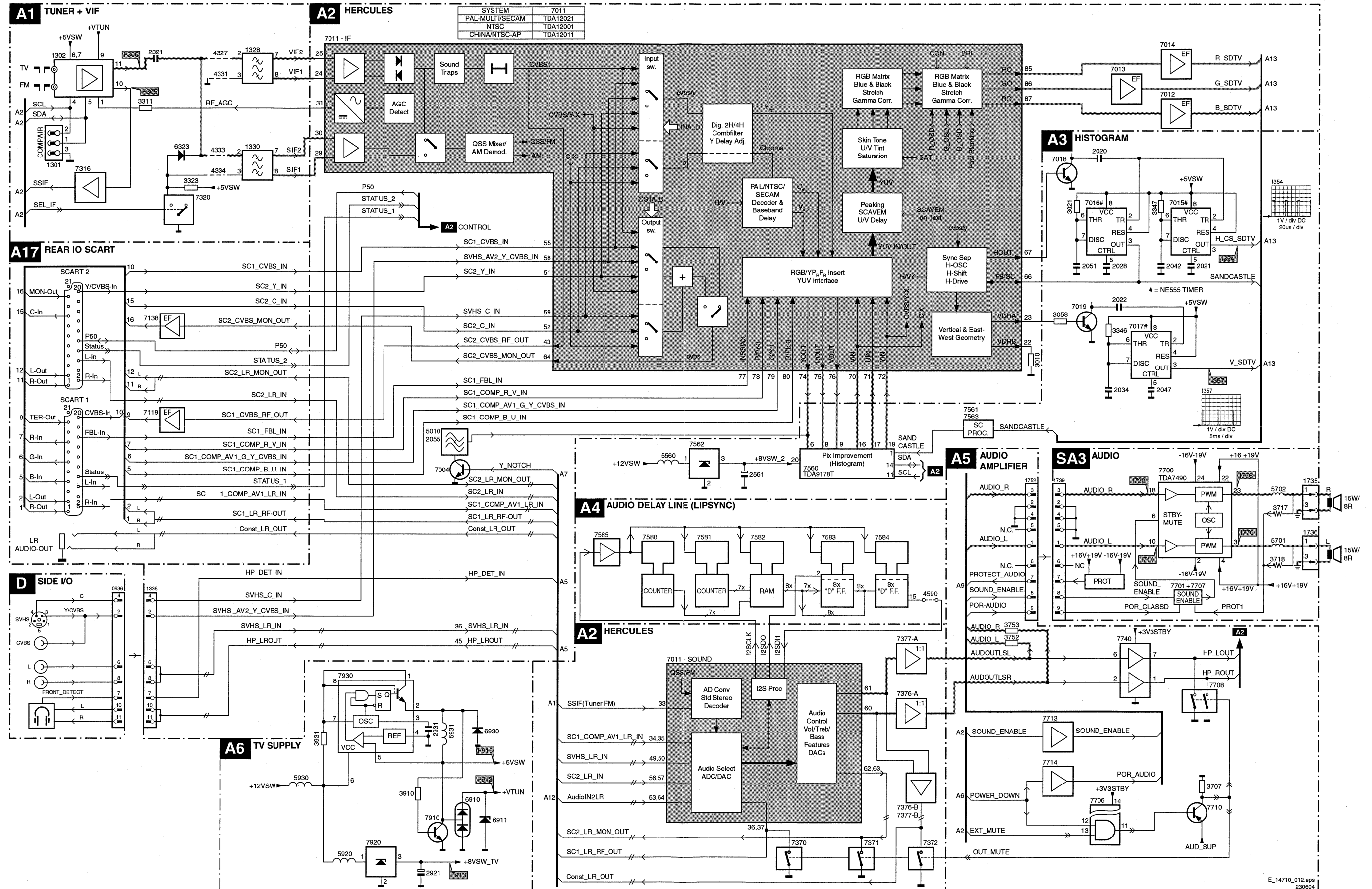
SUPPLY + STANDBY



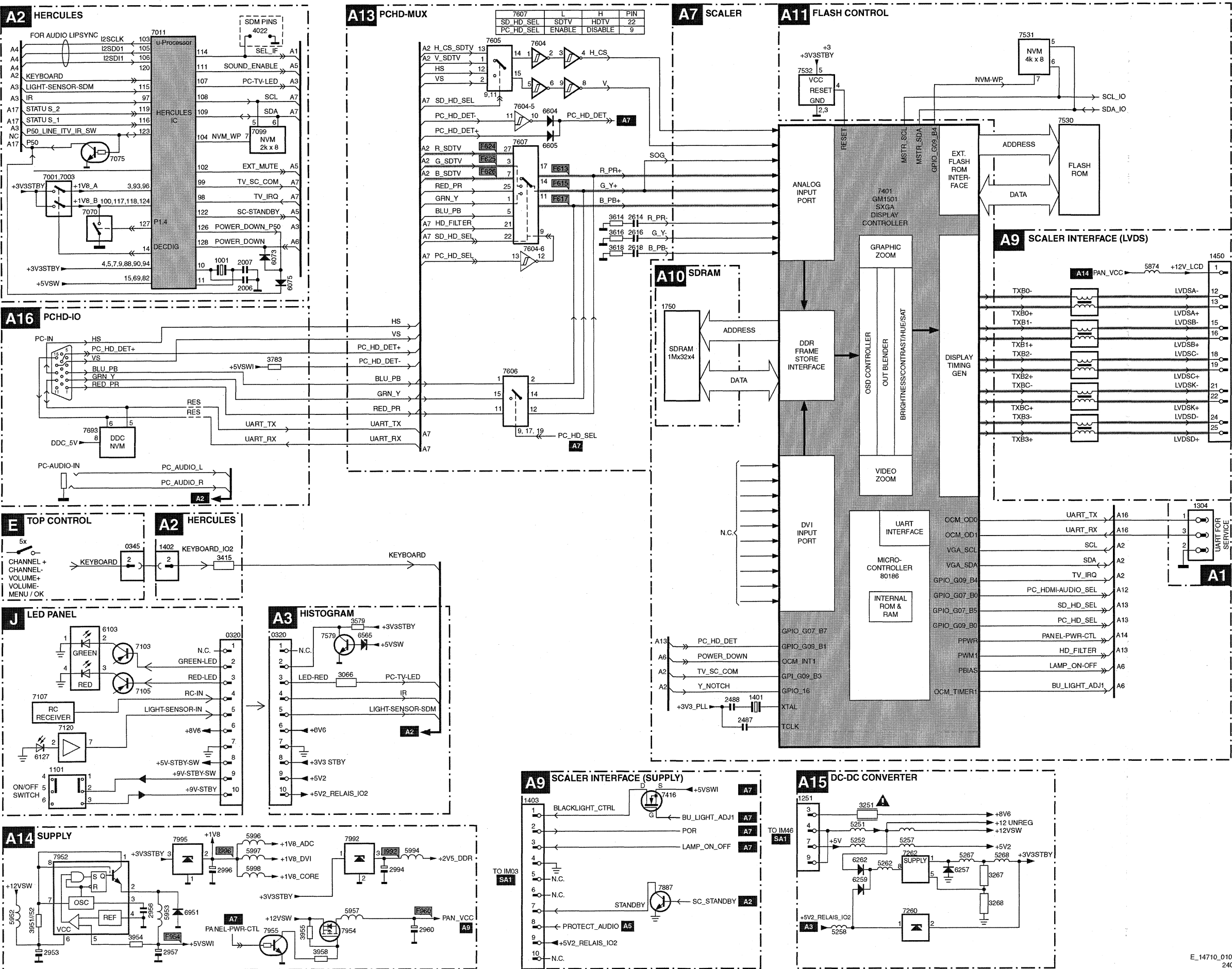
Testpoint Overview Supply and Standby



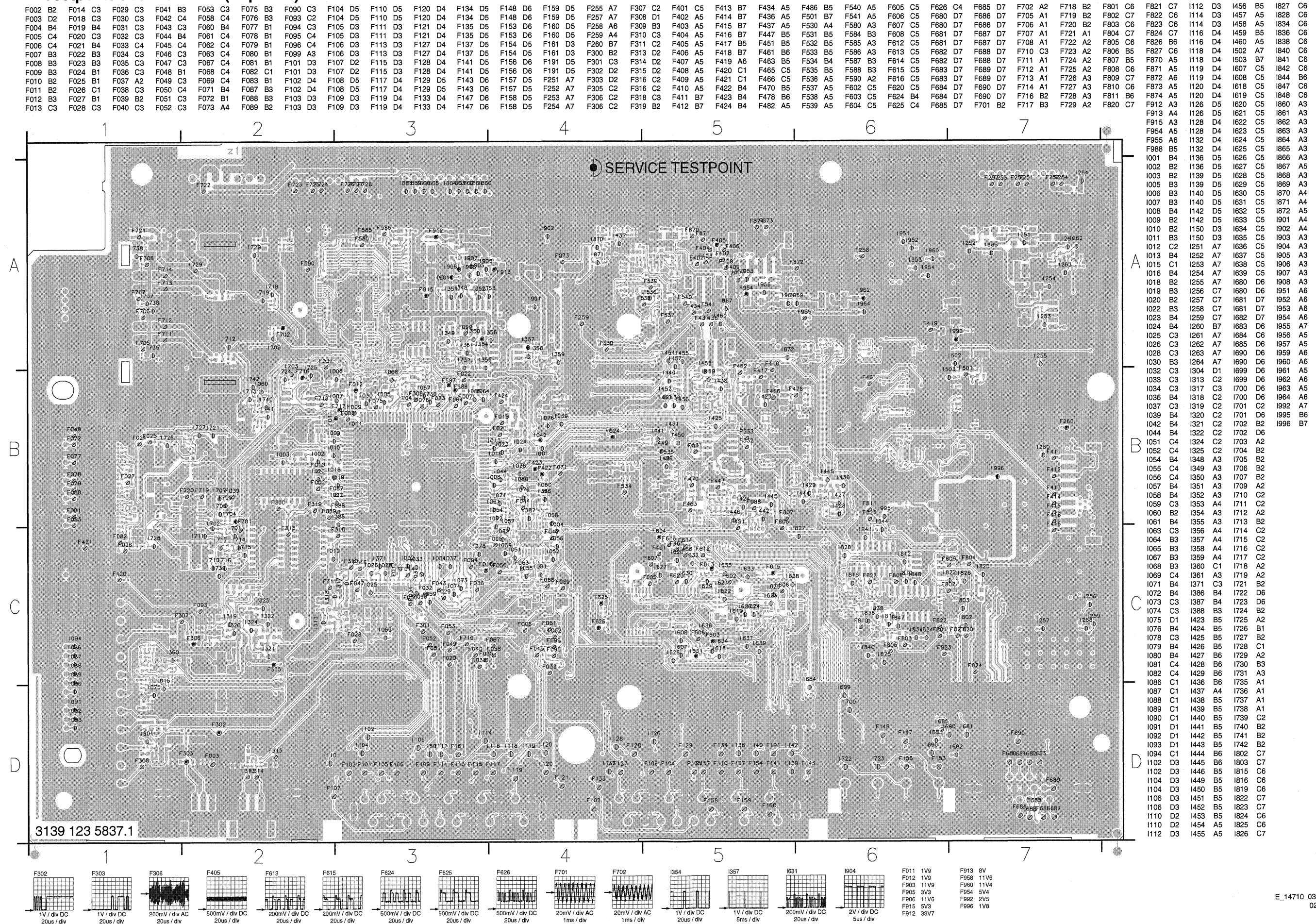
Block Diagram Audio and Video



Block Diagram Audio and Video

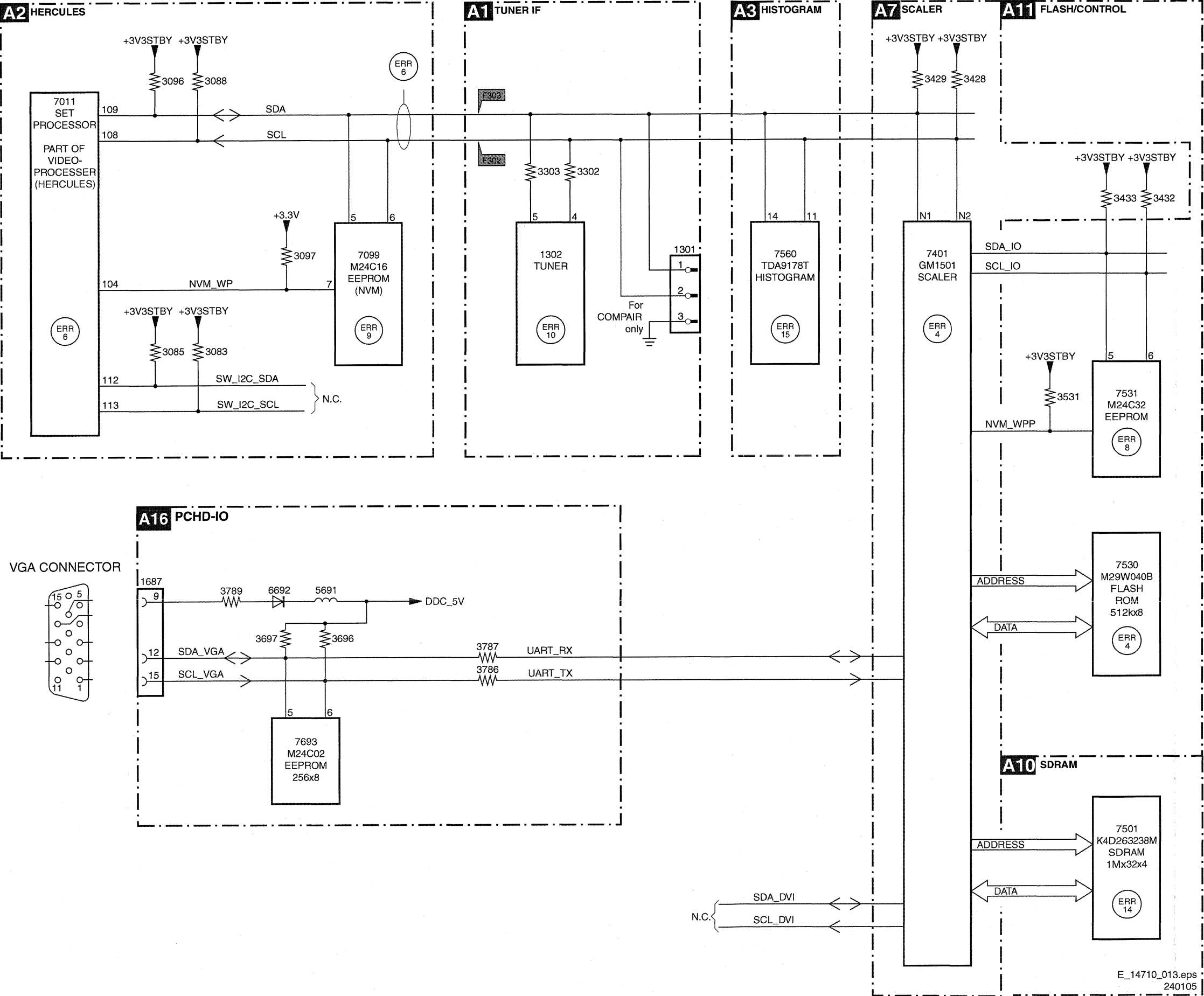


Testpoint Overview SSB (Top Side)

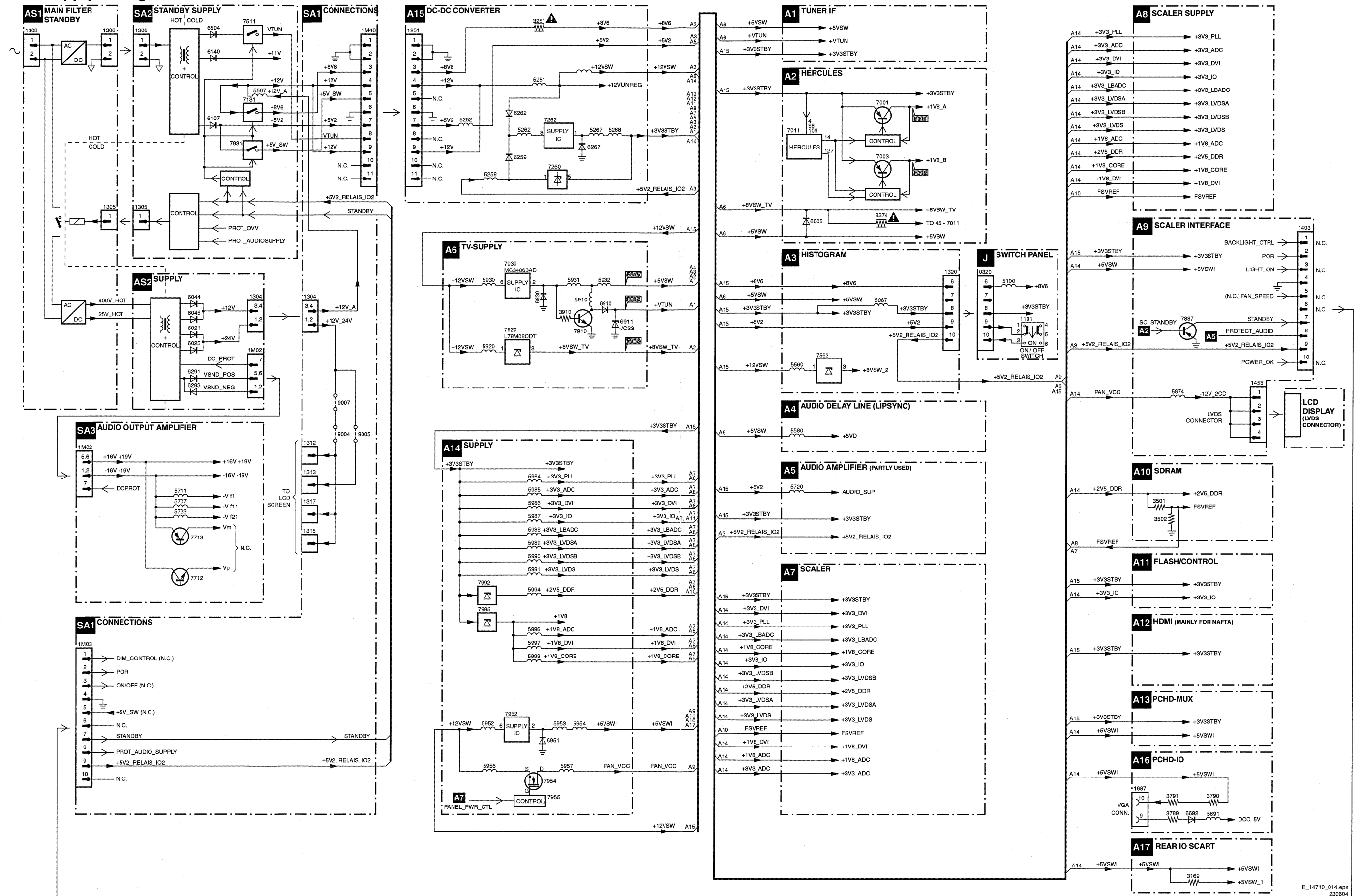


I2C IC Overview

I2C BUS INTERCONNECTION DIAGRAM



Supply Voltage Overview



A1 TUNER + VIF

★1302
UR1336/A F S H-3

★1302	FM	No FM
PAL / SECAM	UR1318	UV1318
NTSC / LATAM	UR1338	UV1338

RF TV
RF FM
MT
TU1FM
AGC
NC1
NC2
VT
VCC
AS
SCL
SDA
2V6
2V6
4339

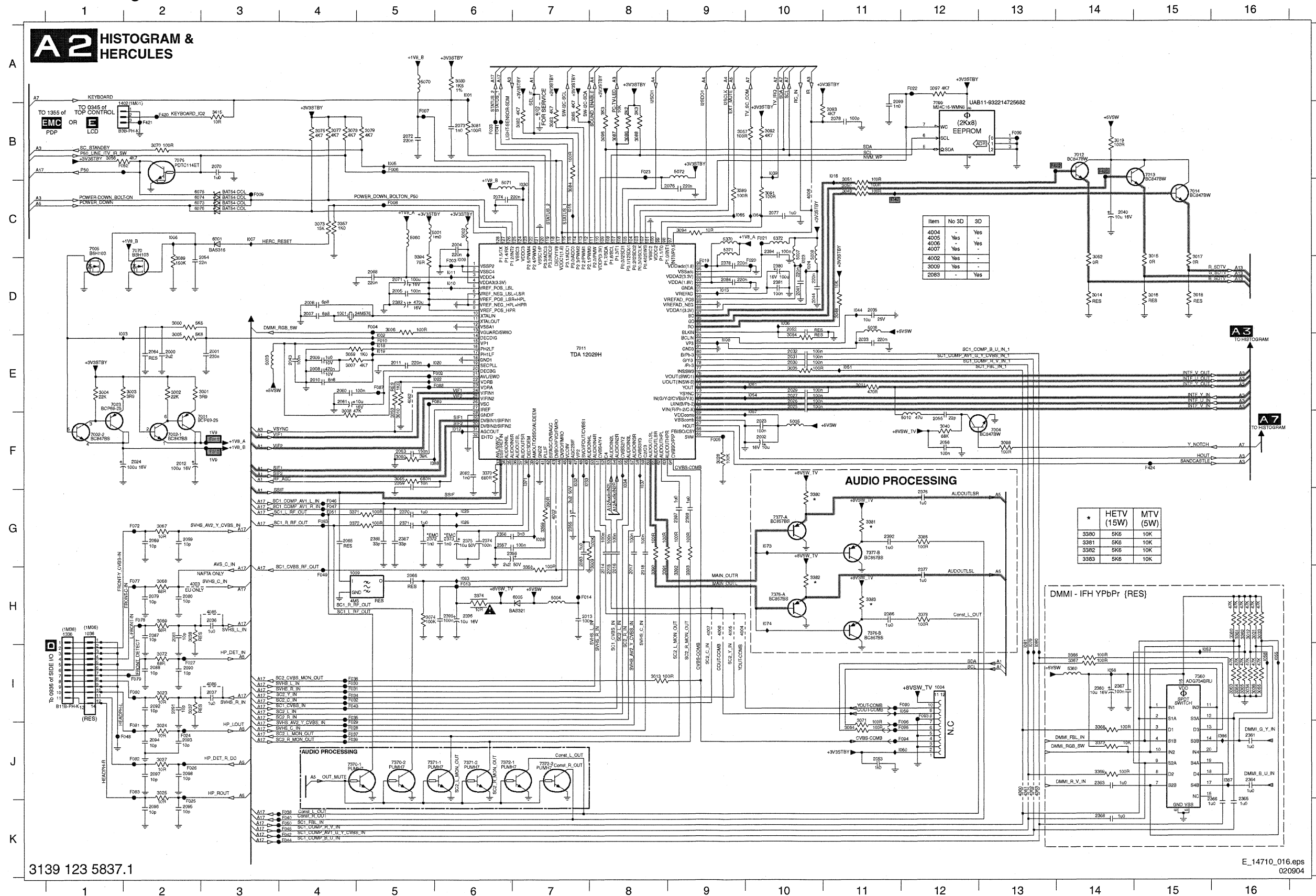
PRE-FIL
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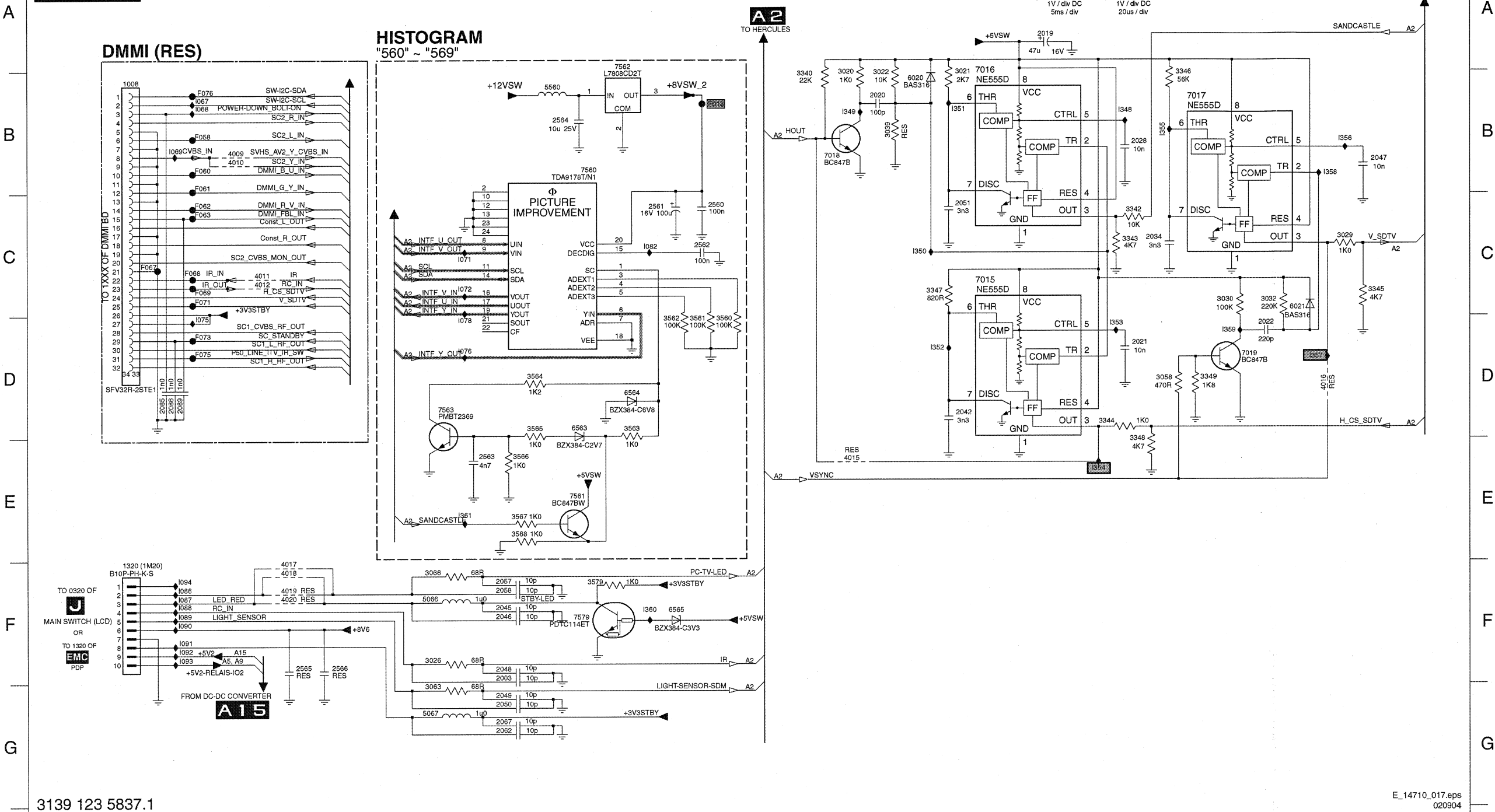
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1330-A E8	1321 C6
1330-B F8	1322 D7
1681 F2	1324 C7
2302 C2	1325 D7
2303 C3	
2307 E2	
2308 E3	
2309 B6	
2311 C5	
2313 E4	
2314 D4	
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2321 C6	
2324 C7	
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3303 C1	
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3305 F3	
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3313 E4	
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SSB: Histogram and Hercules



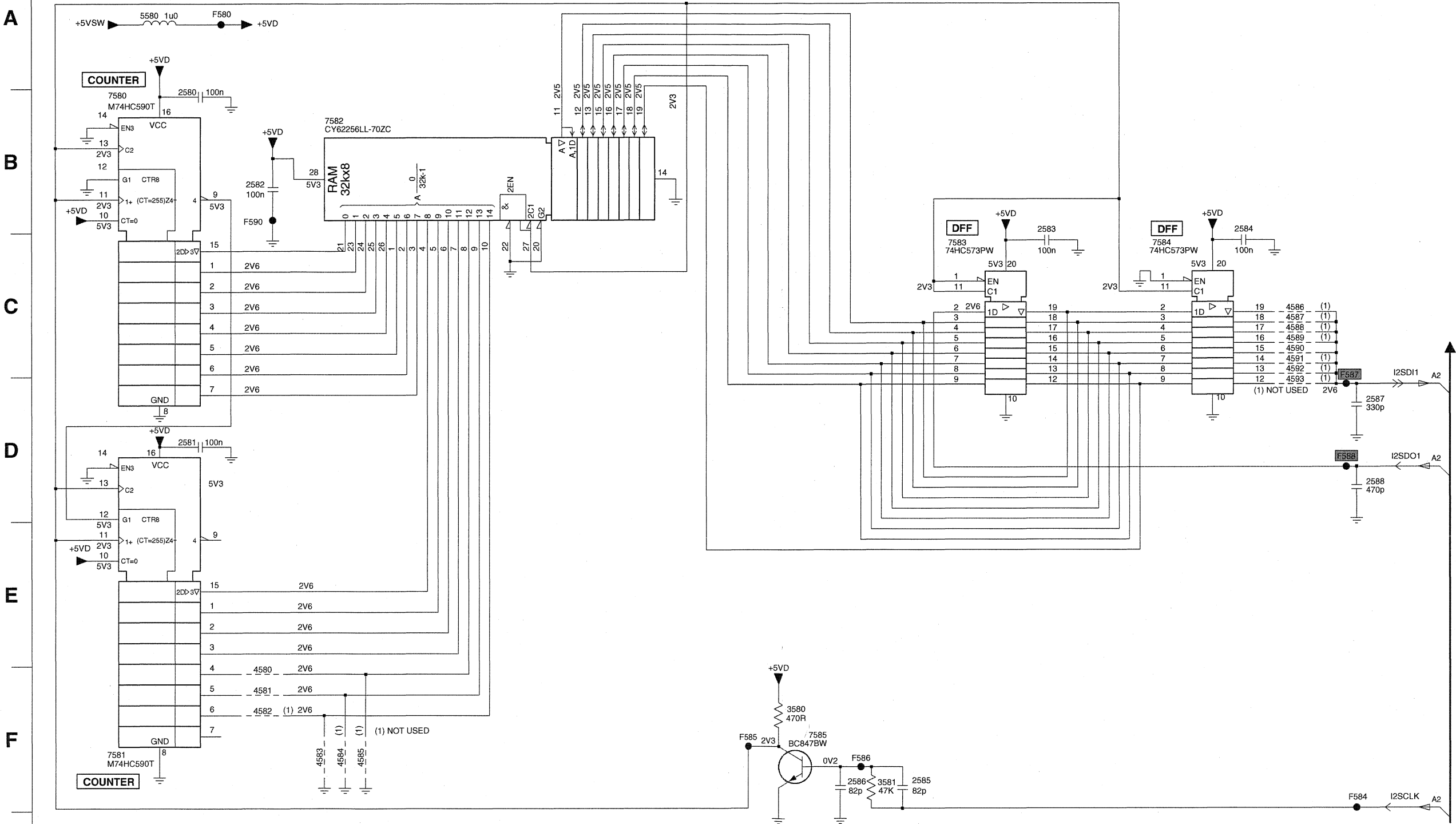
SSB: Histogram and Hercules

A3 HISTOGRAM & HERCULES



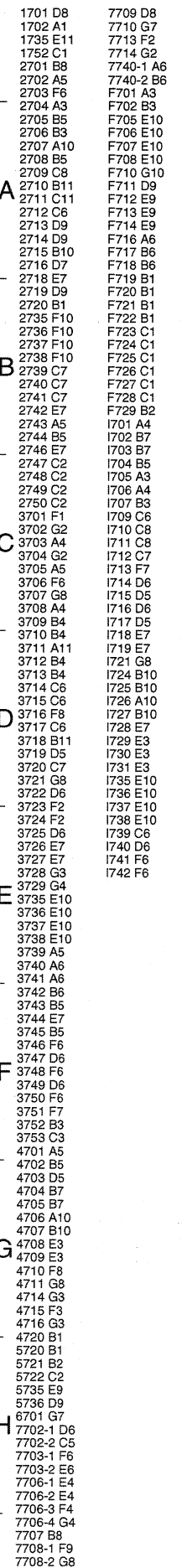
SSB: Audio Delay line (Lip sync)

A 4 AUDIO DELAY LINE (Lip sync)

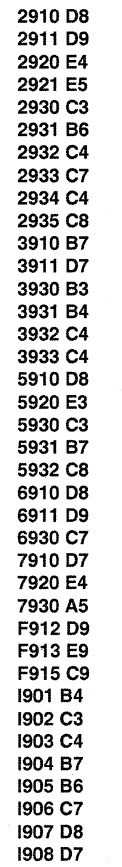


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- 2582 B2
- 2583 B7
- 2584 B8
- 2585 F6
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- 3580 F5
- 3581 F6
- 4580 F2
- 4581 F2
- 4582 F2
- 4583 F2
- 4584 F2
- 4585 F2
- 4586 C9
- 4587 C9
- 4588 C9
- 4589 C9
- 4590 C9
- 4591 C9
- 4592 C9
- 4593 D9
- 5580 A1
- 7580 B1
- 7581 F1
- 7582 B2
- 7583 C6
- 7584 C8
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- F580 A1
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- F587 D9
- F588 D9
- F590 B2

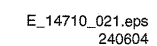
A5 AUDIO AMPLIFIER



A 6 TV-SUPPLY



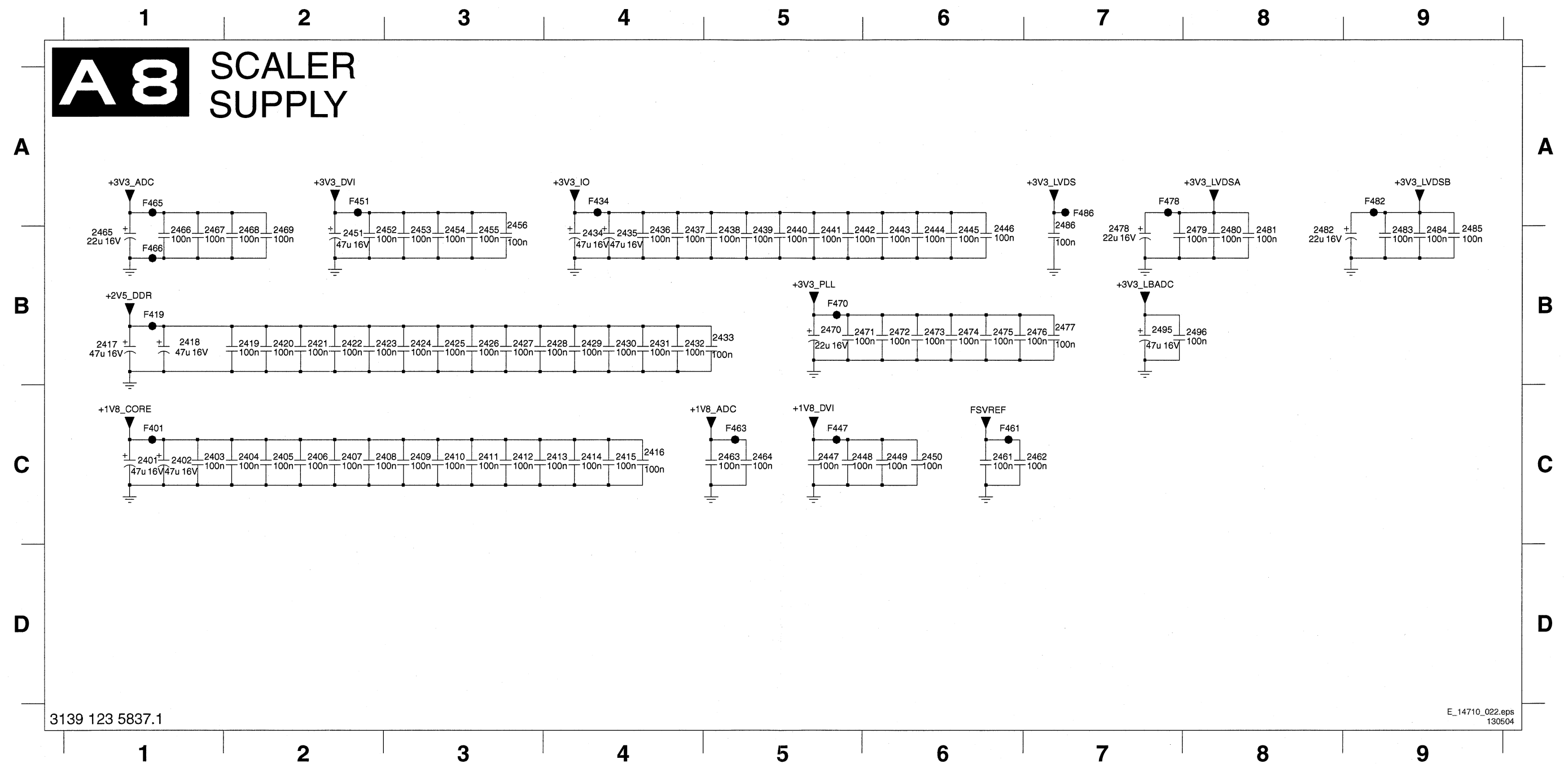
A7 SCALER



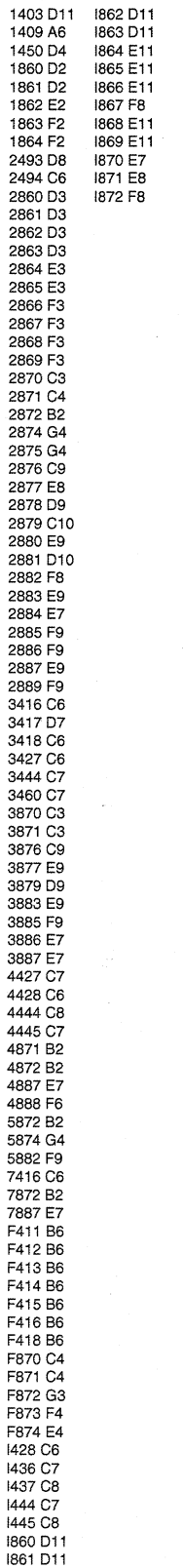
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3433 I3
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3437 J14
3438-1 J11
3438-2 J11
3438-3 J11
3438-4 J11
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3442-3 H3
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SSB: Scaler Supply

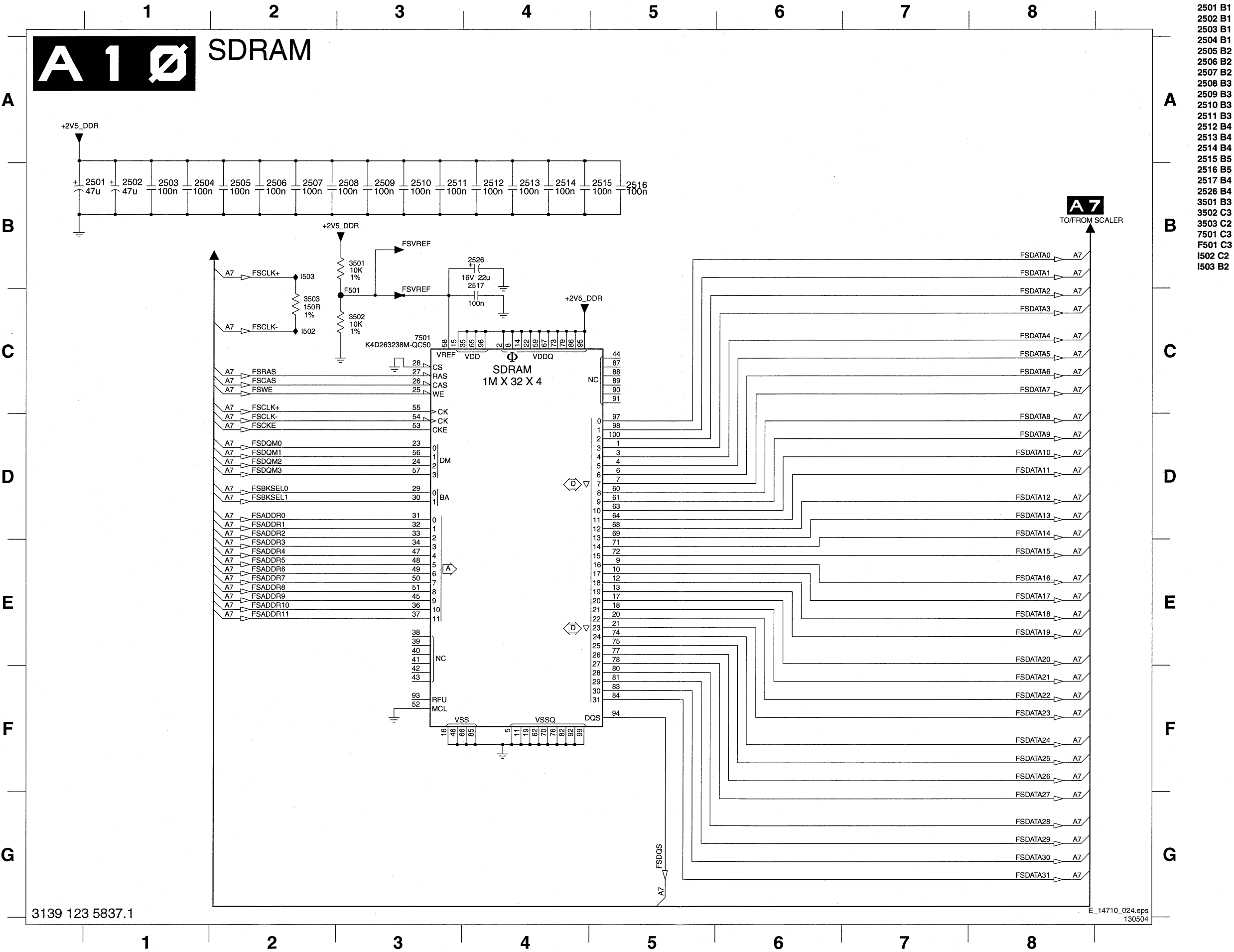
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2404 C2	2408 C3	2412 C3	2416 C4	2420 B2	2424 B3	2428 B4	2432 B4	2436 B4	2440 B5	2444 B6	2448 C5	2452 B3	2456 A3	2464 C5	2468 B2	2472 B6	2476 B7	2480 B8	2484 B9	2496 B8	F447 C5	F465 A1	F482 A9	



A9 SCALER INTERFACE

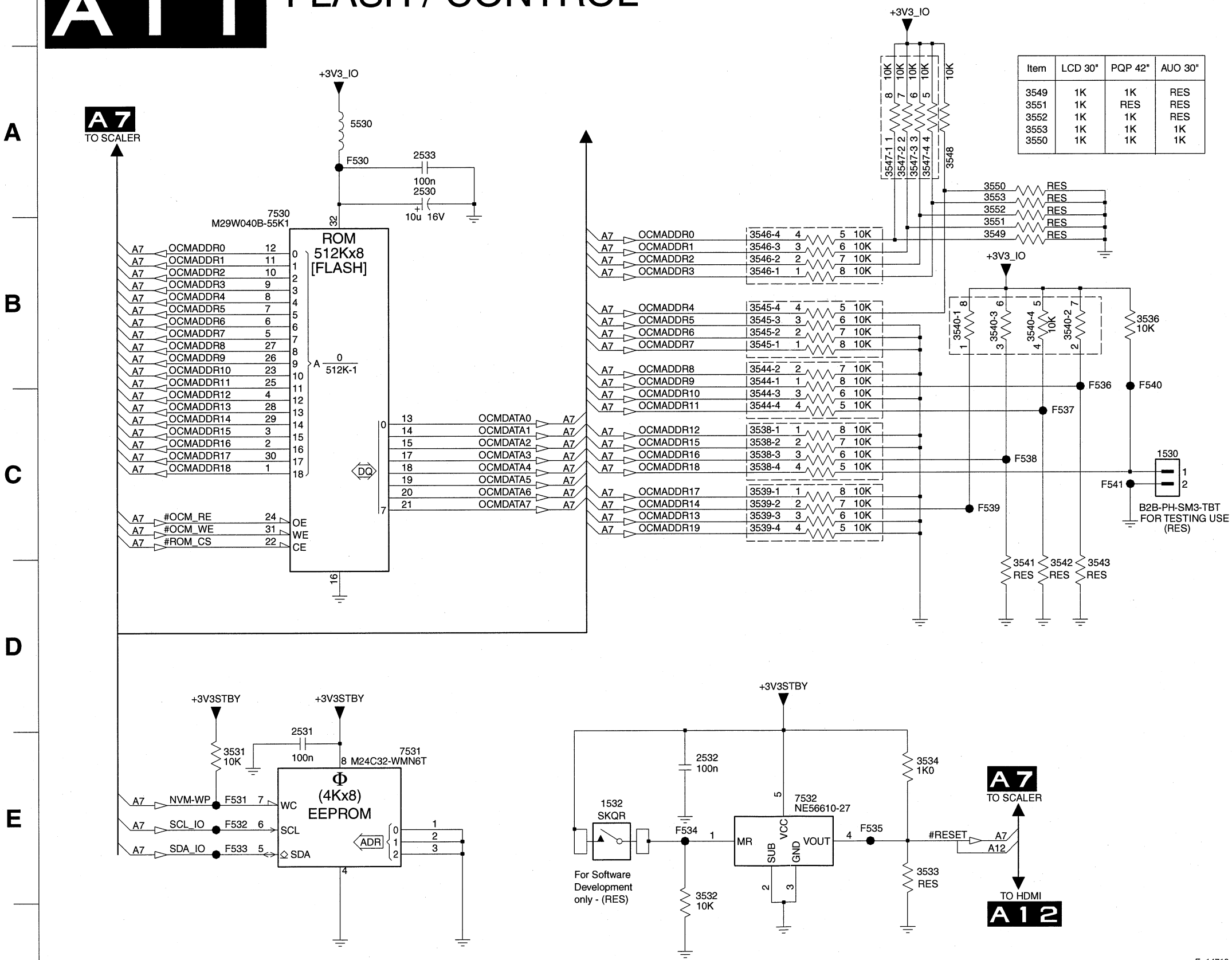


SSB: SDRAM



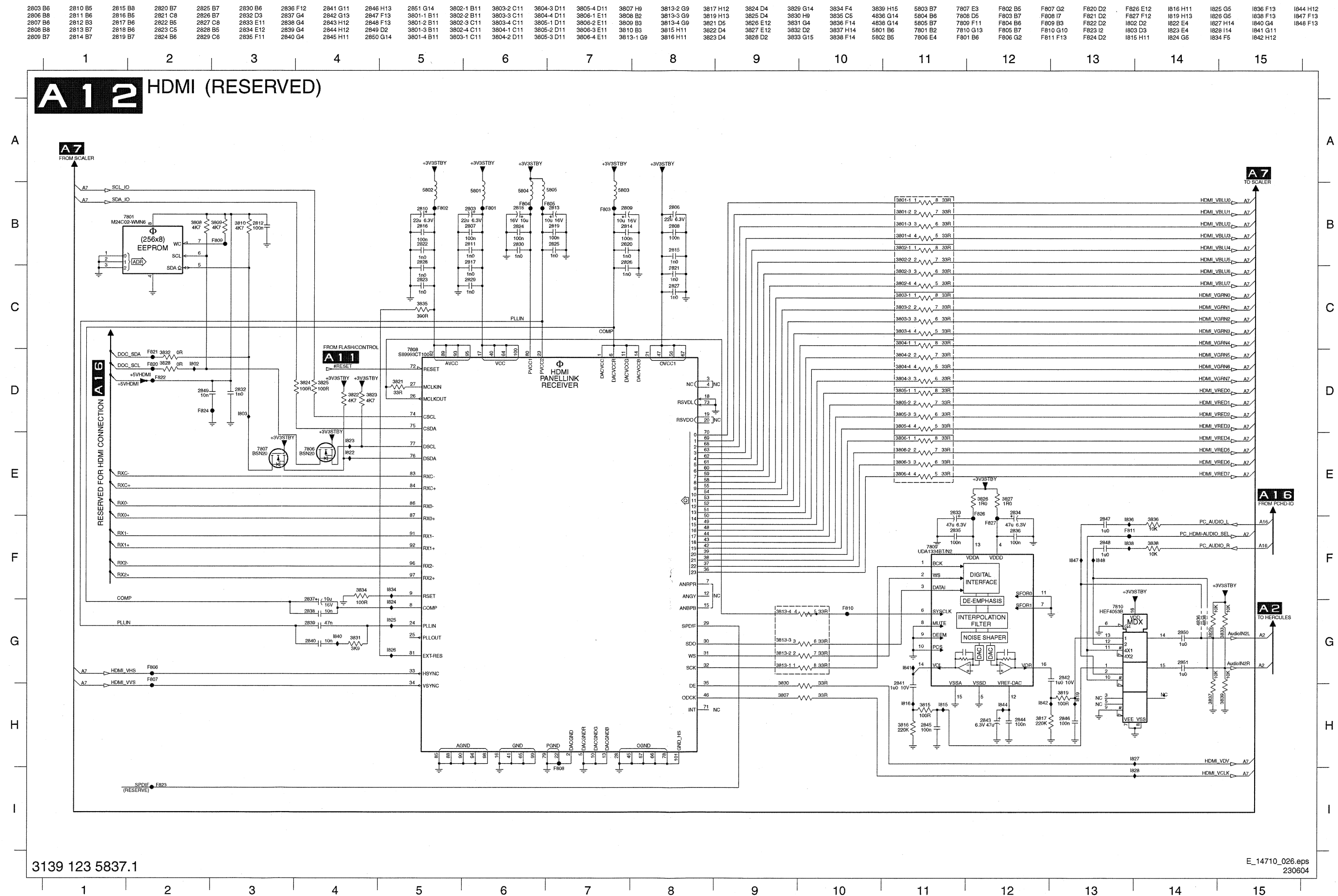
SSB: Flash / Control

A11 FLASH / CONTROL

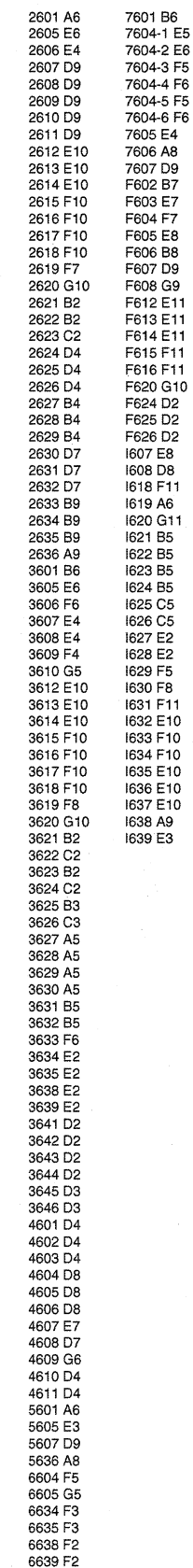


- 1530 C7
- 1532 E4
- 2530 A3
- 2531 E2
- 2532 E4
- 2533 A3
- 3531 E2
- 3532 E4
- 3533 E6
- 3534 E6
- 3536 B7
- 3538-1 C5
- 3538-2 C5
- 3538-3 C5
- 3538-4 C5
- 3539-1 C5
- 3539-2 C5
- 3539-3 C5
- 3539-4 C5
- 3540-1 B6
- 3540-2 B6
- 3540-3 B6
- 3540-4 B6
- 3541 D6
- 3542 D6
- 3543 D7
- 3544-1 B5
- 3544-2 B5
- 3544-3 C5
- 3544-4 C5
- 3545-1 B5
- 3545-2 B5
- 3545-3 B5
- 3545-4 B5
- 3546-1 B5
- 3546-2 B5
- 3546-3 B5
- 3546-4 B5
- 3547-1 A5
- 3547-2 A5
- 3547-3 A6
- 3547-4 A6
- 3548 A6
- 3549 B6
- 3550 A6
- 3551 B6
- 3552 A6
- 3553 A6
- 5530 A2
- 7530 A2
- 7531 E3
- 7532 E5
- F530 A2
- F531 E2
- F532 E2
- F533 E2
- F534 E4
- F535 E5
- F536 C7
- F537 C6
- F538 C6
- F539 C6
- F540 C7
- F541 C7

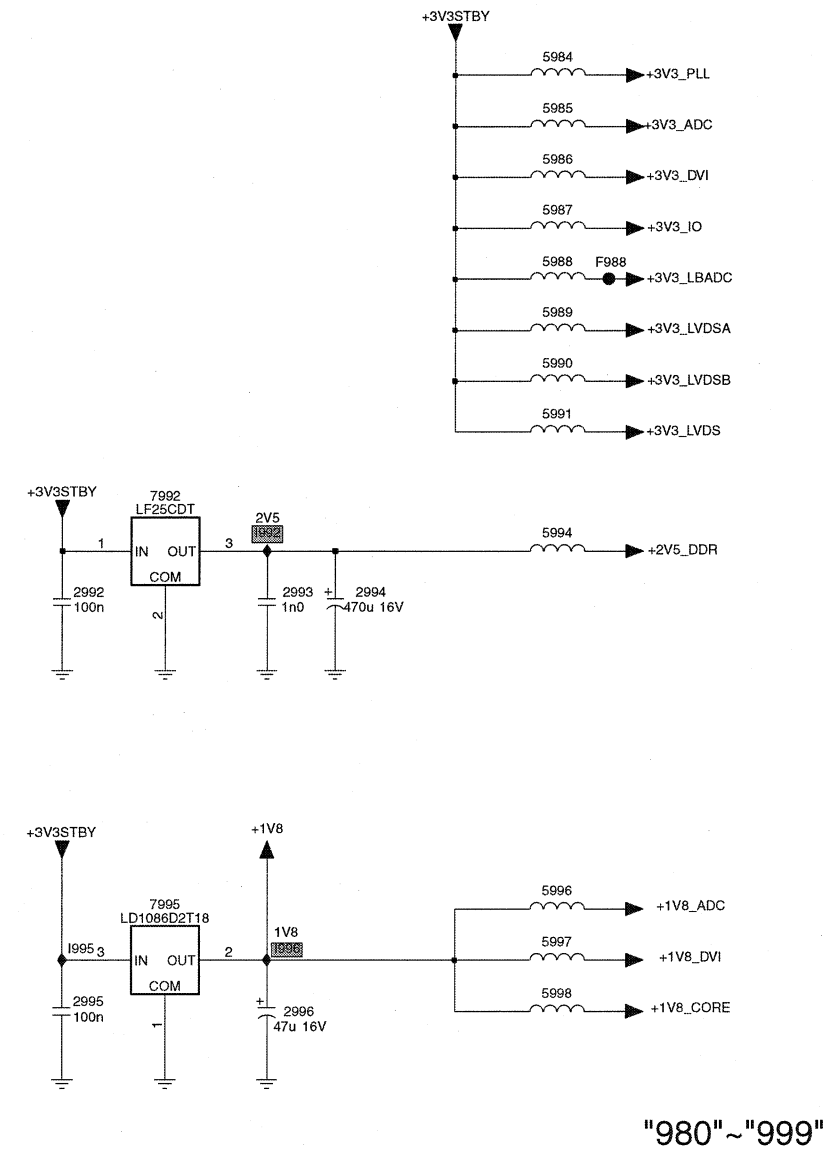
SSB: HDMI



A 13 PCHD-MUX

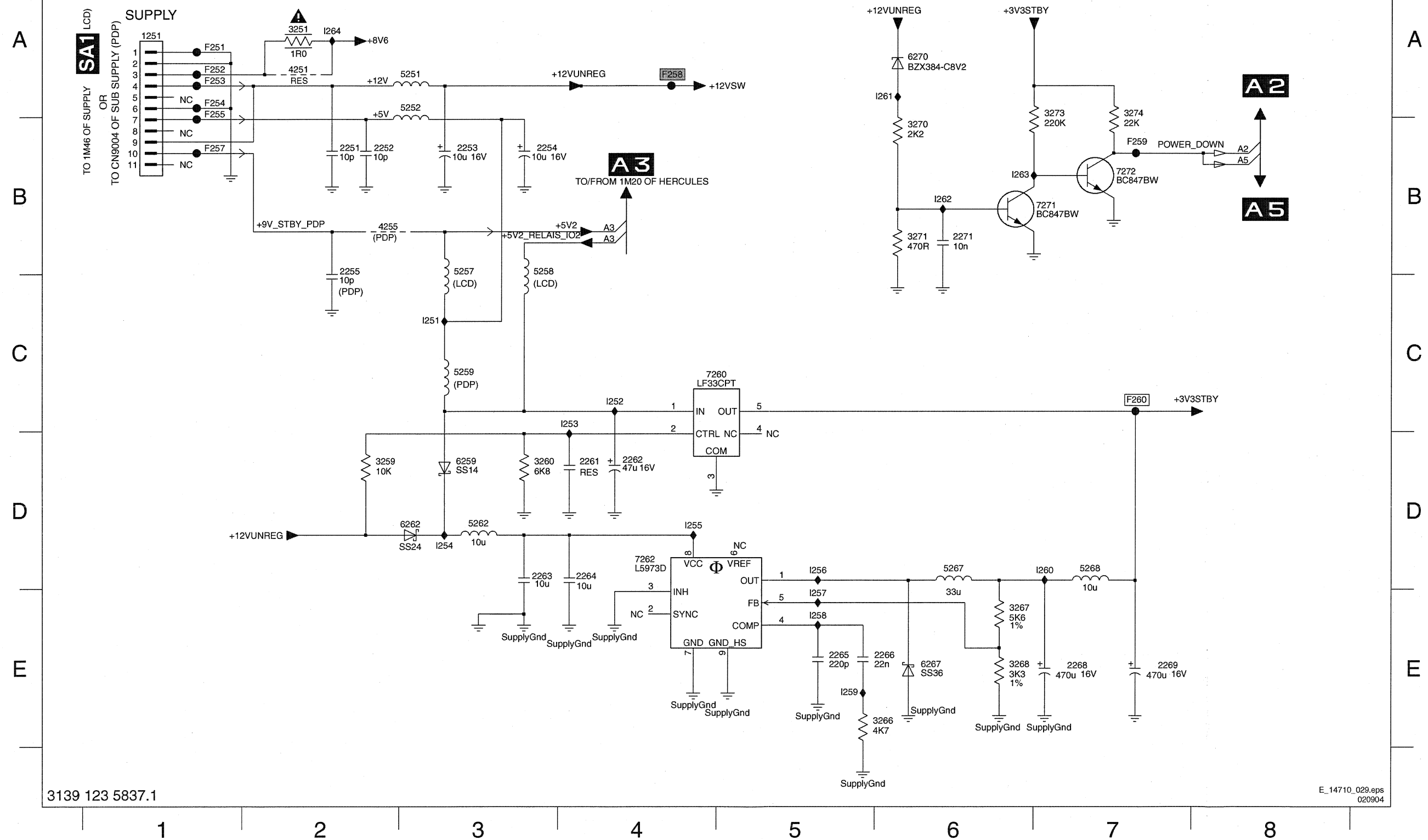


A 14 SUPPLY



ITEM	13"	≥15"
2959	---	100N
3958	1K	15K
5954	---	YES
5955	YES	---
5956	---	YES
5957	YES	---
7953	---	L4940D2T12

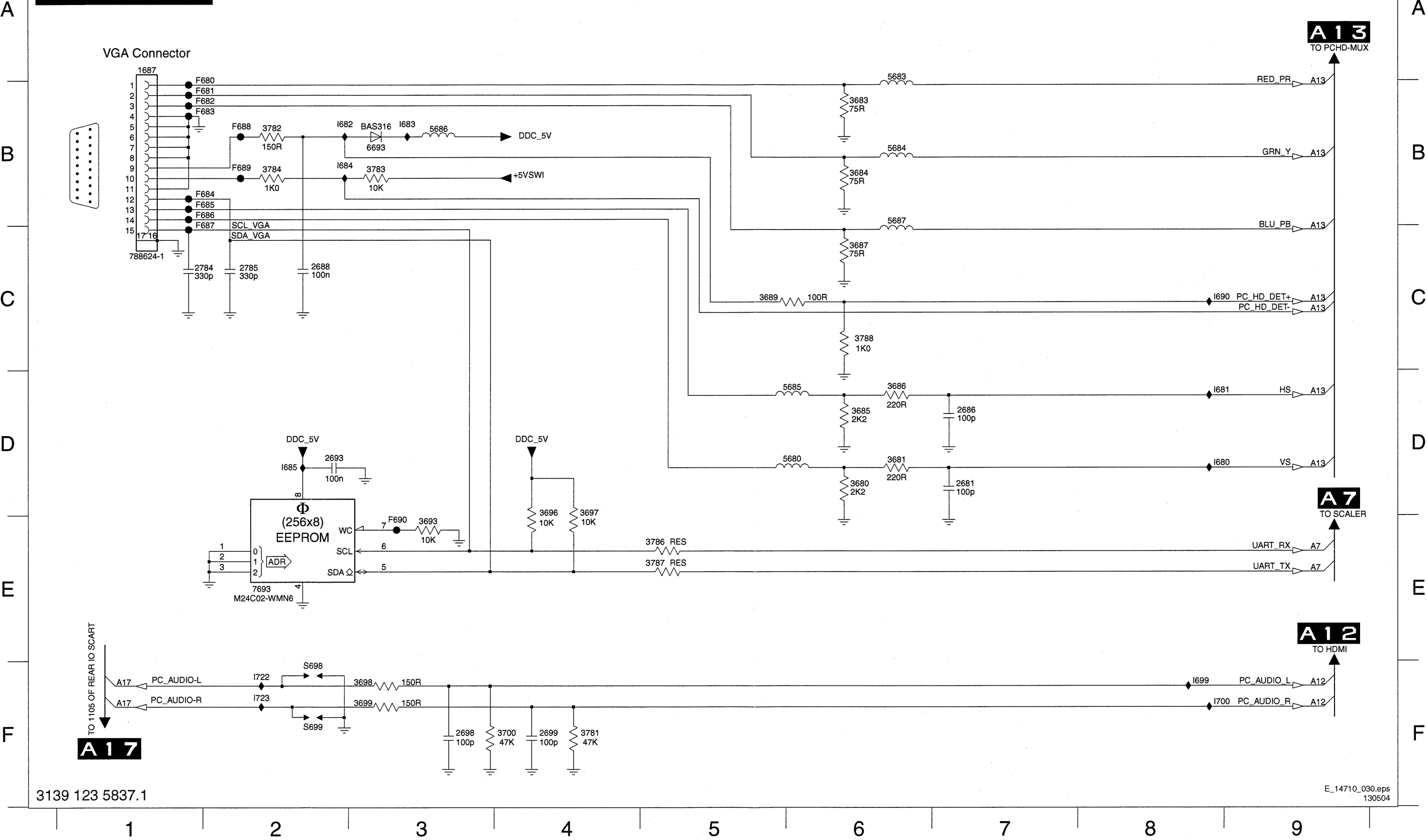
SSB: DC-DC Converter

A 15 DC-DC CONVERTER

1251 A1
2251 B2
2252 B2
2253 B3
2254 B3
2255 B2
2261 D4
2262 D4
2263 D3
2264 D4
2265 E5
2266 E5
2268 E7
2269 E7
2271 B6
3251 A2
3259 D2
3260 D3
3266 E5
3267 E6
3268 E6
3270 B6
3271 B6
3273 A7
3274 A7
4251 A2
4255 B2
5251 A3
5252 A3
5257 B3
5258 B3
5259 C3
5262 D3
5267 D6
5268 D7
6259 D3
6262 D3
6267 E6
6270 A6
7260 C4
7262 D4
7271 B7
7272 B7
F251 A1
F252 A1
F253 A1
F254 A1
F255 A1
F257 B1
F258 A4
F259 B7
F260 C7
I251 C3
I252 C4
I253 C4
I254 D3
I255 D4
I256 D5
I257 E5
I258 E5
I259 E5
I260 D7
I261 A6
I262 B6
I263 B6
I264 A2

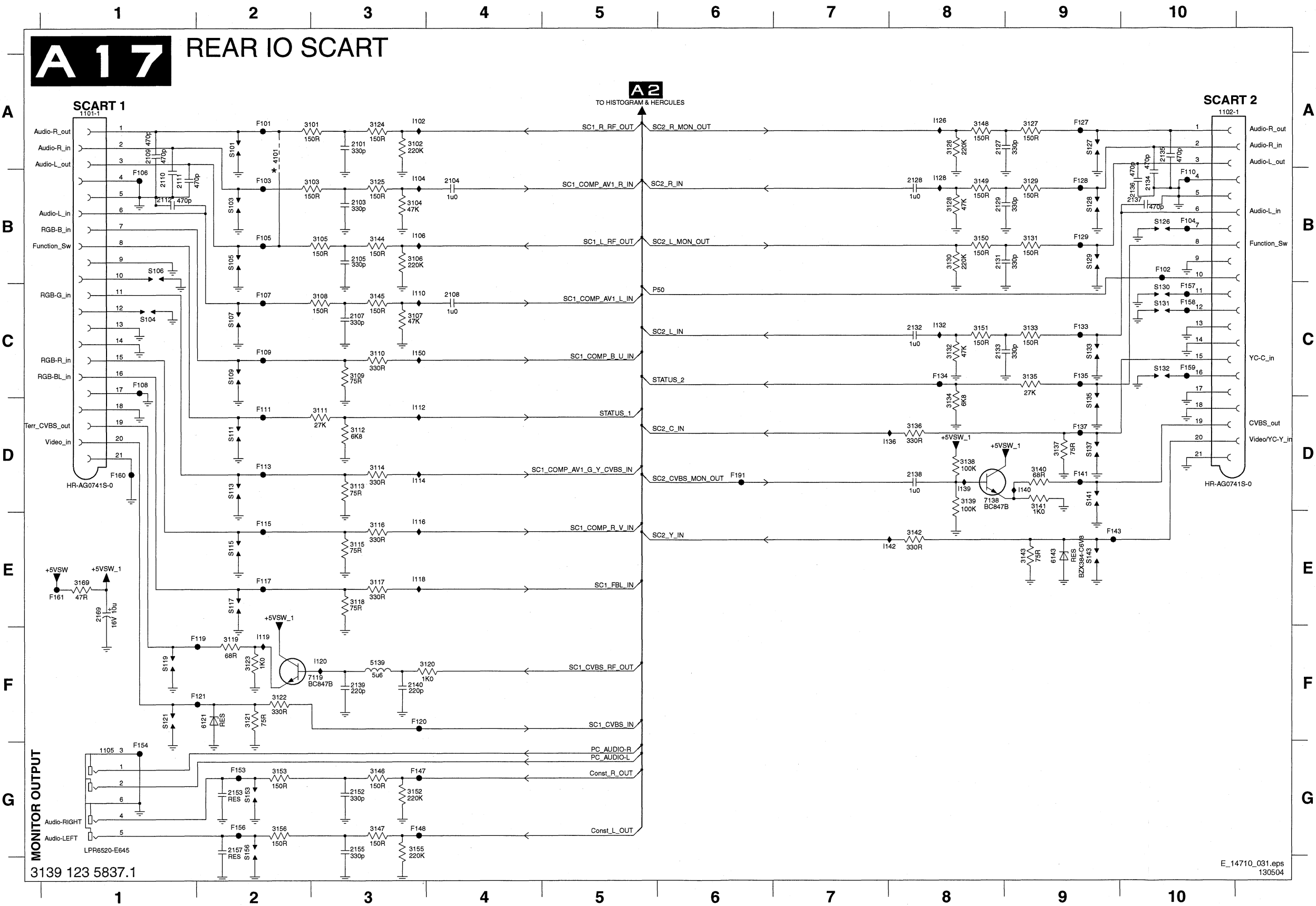
SSB: PCHD IO

A 16 PCHD-IO



- 1687 A1
- 2681 D7
- 2686 D7
- 2688 C2
- 2693 D2
- 2698 F3
- 2699 F4
- 2784 C1
- 2785 C2
- 3680 D6
- 3681 D6
- 3683 B6
- 3684 B6
- 3685 D6
- 3686 D6
- 3687 C6
- 3689 C5
- 3693 E3
- 3696 D4
- 3697 D4
- 3698 F3
- 3699 F3
- 3700 F4
- 3781 F4
- 3782 B2
- 3783 B3
- 3784 B2
- 3786 E5
- 3787 E5
- 3788 C6
- 5680 D6
- 5683 A6
- 5684 B6
- 5685 D6
- 5686 B3
- 5687 B6
- 6693 B3
- 7693 E2
- F680 B2
- F681 B2
- F682 B2
- F683 B2
- F684 B2
- F685 B2
- F686 B2
- F687 C2
- F688 B2
- F689 B2
- F690 E3
- I680 D8
- I681 D8
- I682 B2
- I683 B3
- I684 B2
- I685 D2
- I690 C8
- I699 F8
- I700 F8
- I722 F2
- I723 F2
- S698 F2
- S699 F2

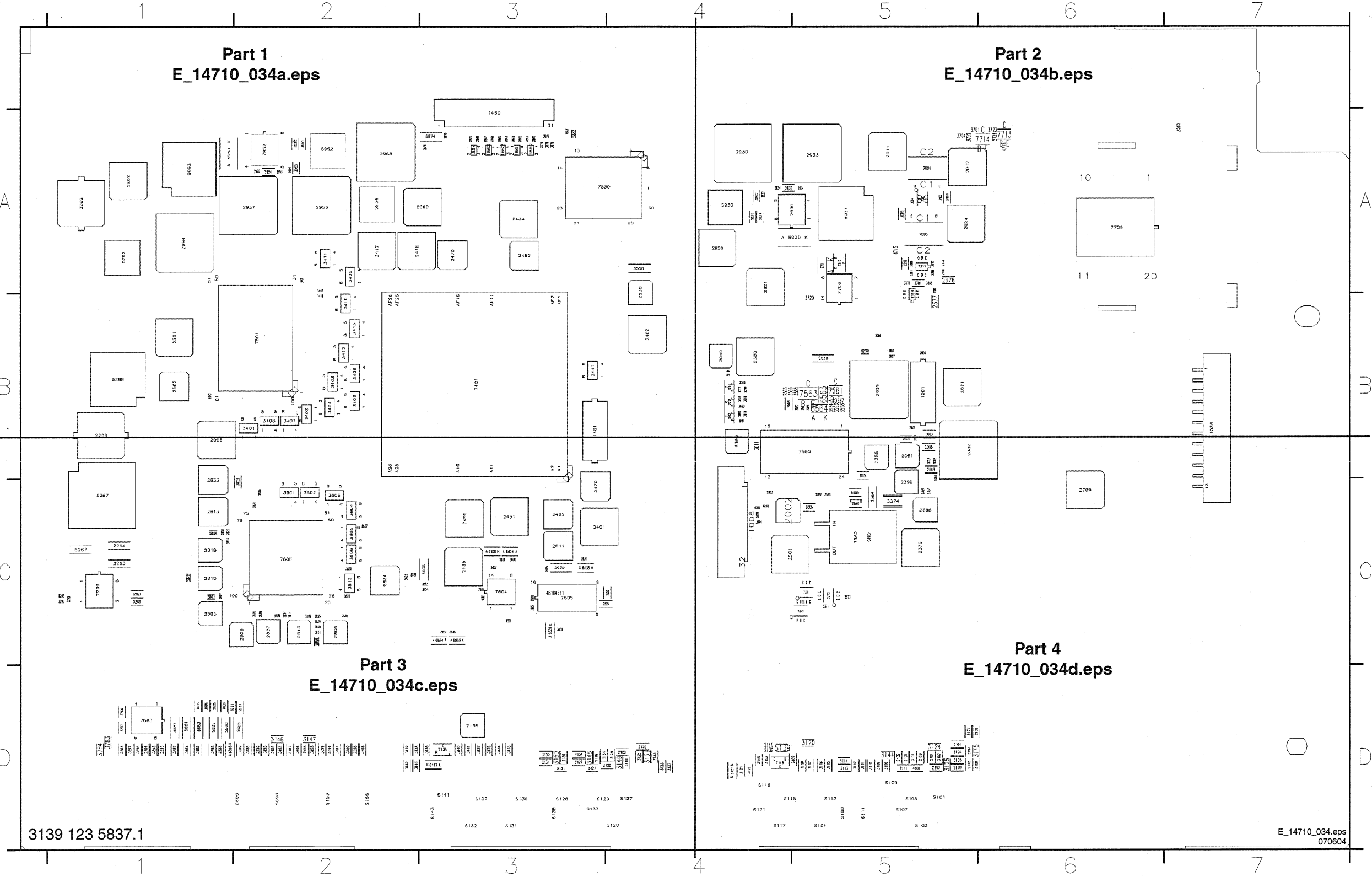
SSB: Rear IO Scart



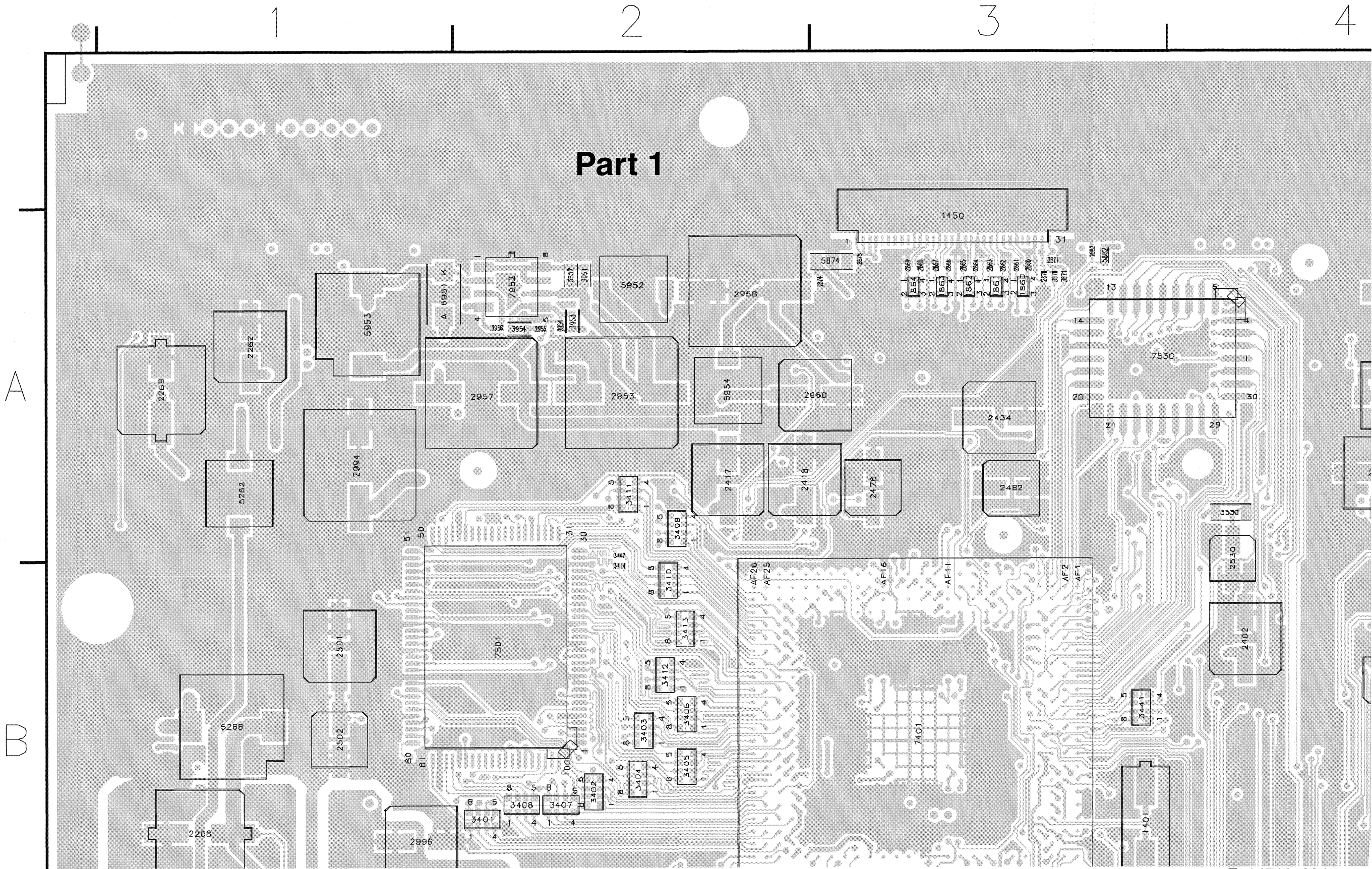
1101-1 A1	6121 F2
1102-1 A10	6143 E9
1105 G1	7119 F3
2101 A3	7138 D8
2103 B3	F101 A2
2104 B4	F102 B10
2105 B3	F103 B2
2107 C3	F104 B10
2108 C4	F105 B2
2109 A1	F106 B1
2110 B1	F107 C2
2111 B1	F108 C1
2112 B1	F109 C2
2127 A8	F110 B10
2128 B8	F111 D2
2129 B8	F113 D2
2131 B8	F115 E2
2132 C8	F117 E2
2133 C8	F119 F2
2134 B10	F120 F3
2135 A10	F121 F2
2136 B10	F127 A9
2137 B10	F128 B9
2138 D8	F129 B9
2139 F3	F133 C9
2140 F3	F134 C8
2152 G3	F135 C9
2153 G2	F137 D9
2155 G3	F141 D9
2157 G2	F143 E9
2169 E1	F147 G3
3101 A3	F148 G3
3102 A3	F153 G2
3103 B3	F154 G1
3104 B3	F156 G2
3105 B3	F157 C10
3106 B3	F158 C10
3107 C3	F159 C10
3108 C3	F160 D1
3109 C3	F161 E1
3110 C3	F191 D6
3111 D3	I102 A3
3112 D3	I104 B3
3113 D3	I106 B3
3114 D3	I110 C3
3115 E3	I112 D3
3116 E3	I114 D3
3117 E3	I116 E3
3118 E3	I118 E3
3119 F2	I119 F2
3120 F4	I120 F3
3121 F2	I126 A8
3122 F2	I128 B8
3123 F2	I132 C8
3124 A3	I136 D8
3125 B3	I139 D8
3126 A8	I140 D9
3127 A9	I142 E8
3128 B8	I150 C3
3129 B9	S101 A2
3130 B8	S103 B2
3131 B9	S104 C1
3132 C8	S105 B2
3133 C9	S106 B1
3134 D8	S107 C2
3135 C9	S109 C2
3136 D8	S111 D2
3137 D9	S113 D2
3138 D8	S115 E2
3139 D8	S117 E2
3140 D9	S119 F1
3141 D9	S121 F1
3142 E8	S126 B10
3143 E9	S127 A9
3144 B3	S128 B9
3145 C3	S129 B9
3146 G3	S130 C10
3147 G3	S131 C10
3148 A8	S132 C10
3149 B8	S133 C9
3150 B8	S135 D9
3151 C8	S137 D9
3152 G3	S141 D9
3153 G2	S143 E9
3155 G3	S153 G2
3156 G2	S156 G2
3169 E1	
4101 A2	
5139 F3	

Layout Small Signal Panel (Top Side Overview)

1001	B5	2027	C5	2127	D3	2169	D3	2386	A5	2530	A4	2699	D2	2825	C2	2867	A3	2953	A2	3016	B4	3105	D5	3122	D4	3139	D2	3169	D5	3403	B2	3563	B5	3635	C3	3701	A5	3803	C2	3931	A4	5004	B5	5687	D1	6564	B5	7119	D4	7693	D1
1008	C4	2035	B5	2128	D4	2262	A1	2392	A5	2560	C5	2708	A5	2826	C2	2868	A3	2954	A2	3017	B4	3106	D5	3123	D4	3140	D3	3169	D5	3404	B2	3564	B5	3638	C3	3702	A5	3804	C2	3932	A4	5005	C5	5801	C1	6604	C3	7138	D3	7706	A5
1036	B7	2040	B4	2129	D4	2263	C1	2396	C5	2561	C4	2709	C6	2830	C1	2869	A3	2955	A2	3018	B4	3107	D5	3124	D5	3141	D3	3169	D5	3405	B2	3565	B5	3639	C3	3704	A5	3805	C2	3933	A4	5006	B4	5802	C1	6605	C3	7262	C1	7709	A6
1401	B3	2061	B5	2131	D3	2264	C1	2401	C3	2562	C4	2784	D1	2833	C1	2870	A3	2956	A2	3019	B4	3108	D5	3125	D5	3142	D2	3169	D5	3406	B2	3566	B4	3680	D1	3712	A5	3806	C2	3951	A2	5072	B5	5804	C1	6634	C3	7370	C5	7710	A5
1450	A3	2063	B5	2132	D4	2265	C1	2402	B4	2563	B4	2785	D1	2834	C2	2871	A3	2957	A2	3049	B4	3109	D5	3126	D3	3143	D2	3169	D5	3407	B2	3567	B5	3681	D1	3713	A5	3807	C2	3952	A2	5139	D4	5805	C2	6635	C3	7371	C5	7713	A6
1860	A3	2071	B5	2133	D4	2266	C1	2417	A2	2564	C5	2803	C1	2837	C2	2874	A3	2958	A2	3050	B4	3110	D5	3127	D3	3144	D5	3169	D5	3408	B2	3568	B5	3683	D1	3723	A6	3813	C2	3953	A2	5262	A1	5874	A3	6638	C3	7372	C5	7714	A6
1861	A3	2089	C4	2134	D3	2268	B1	2418	A2	2565	A7	2806	C2	2838	C2	2875	A3	2960	A3	3051	B4	3111	D5	3128	D4	3145	D5	3169	D5	3409	A2	3605	C3	3684	D1	3724	A6	3821	C2	3954	A2	5267	C1	5882	A3	6639	C3	7376	B5	7808	C2
1862	A3	2101	D5	2135	D3	2269	A1	2434	A3	2605	C3	2807	C1	2839	C2	2882	A3	2994	A1	3052	B4	3112	D5	3129	D4	3146	D2	3169	D5	3410	B2	3606	C3	3685	D1	3729	B5	3824	C2	4009	C4	5268	B1	5930	A4	6693	D1	7377	A5	7930	A4
1863	A3	2103	D5	2136	D3	2355	B5	2435	C3	2606	C3	2808	C2	2840	C2	2911	A5	2996	B1	3053	B5	3113	D5	3130	D3	3147	D2	3169	D5	3411	A2	3607	C3	3686	D1	3781	D2	3825	C2	4010	C4	5530	A4	5931	A5	6701	A5	7401	B3	7952	A2
1864	A3	2104	D5	2137	D4	2356	C5	2451	C3	2611	C3	2809	C2	2843	C1	2920	A4	3001	A5	3060	B5	3114	D5	3131	D3	3148	D3	3169	D5	3412	B2	3608	C3	3687	D1	3782	D1	3826	C2	4062	B5	5560	C5	5952	A2	6930	A5	7501	B2		
2002	C4	2105	D5	2138	D2	2357	C5	2465	C3	2625	C4	2810	C1	2860	A3	2921	A4	3002	A5	3085	B5	3115	D5	3132	D4	3149	D4	3169	D5	3413	B2	3609	C3	3689	D2	3783	D1	3830	C2	4101	D5	5605	C3	5953	A1	6951	A1	7530	A3		
2006	B5	2107	D5	2139	D4	2360	B4	2470	C3	2626	C4	2813	C2	2861	A3	2930	A4	3003	A5	3086	B5	3116	D5	3133	D4	3150	D3	3169	D5	3414	B2	3610	C3	3693	D1	3784	D1	3831	C2	4609	C3	5636	C3	5954	A2	7001	A5	7560	B5		
2007	B5	2108	D5	2140	D4	2375	C5	2478	A3	2681	D2	2814	C2	2862	A3	2931	A5	3004	A5	3087	B5	3117	D5	3134	D3	3151	D4	3169	D5	3441	B3	3621	C2	3696	D1	3786	D1	3834	C2	4610	C3	5680	D1	6005	C5	7002	A5	7561	B5		
2008	B5	2109	D5	2152	D2	2376	A5	2482	A3	2686	D1	2818	C1	2863	A3	2932	A4	3007	B5	3101	D5	3118	D5	3135	D3	3152	D2	3169	D5	3447	A2	3622	C2	3697	D1	3787	D1	3835	C1	4611	C3	5683	D1	6121	D4	7003	A5	7562	C5		
2009	B5	2110	D5	2153	D2	2377	B5	2495	C3	2688	D1	2819	C2	2864	A3	2933	A5	3011	B4	3102	D5	3119	D4	3136	D3	3153	D2	3169	D5	3486	A5	3560	B5	3623	C3	3698	D2	3788	D2	3870	A3	4714	A6	5684	D1	6143	D3	7012	B4	7563	B5
2012	A5	2111	D5	2155	D2	2380	B4	2501	B1	2693	D1	2820	C2	2865	A3	2934	A4	3014	B4	3103	D5	3120	D5	3137	D3	3155	D2	3169	D5	3401	B2	3561	B5	3624	C3	3699	D2	3801	C2	3871	A3	4715	A5	5685	D1	6267	C1	7013	B4	7604	C3
2024	A5	2112	D5	2157	D2	2382	B5	2502	B1	2698	D2	2824	C1	2866	A3	2935	B5	3015	B4	3104	D5	3121	D4	3138	D3	3156	D2	3169	D5	3402	B2	3562	B5	3634	C3	3700	D2	3802	C2	3930	A4	5003	B5	5686	D2	6563	B5	7014	B4	7605	C3



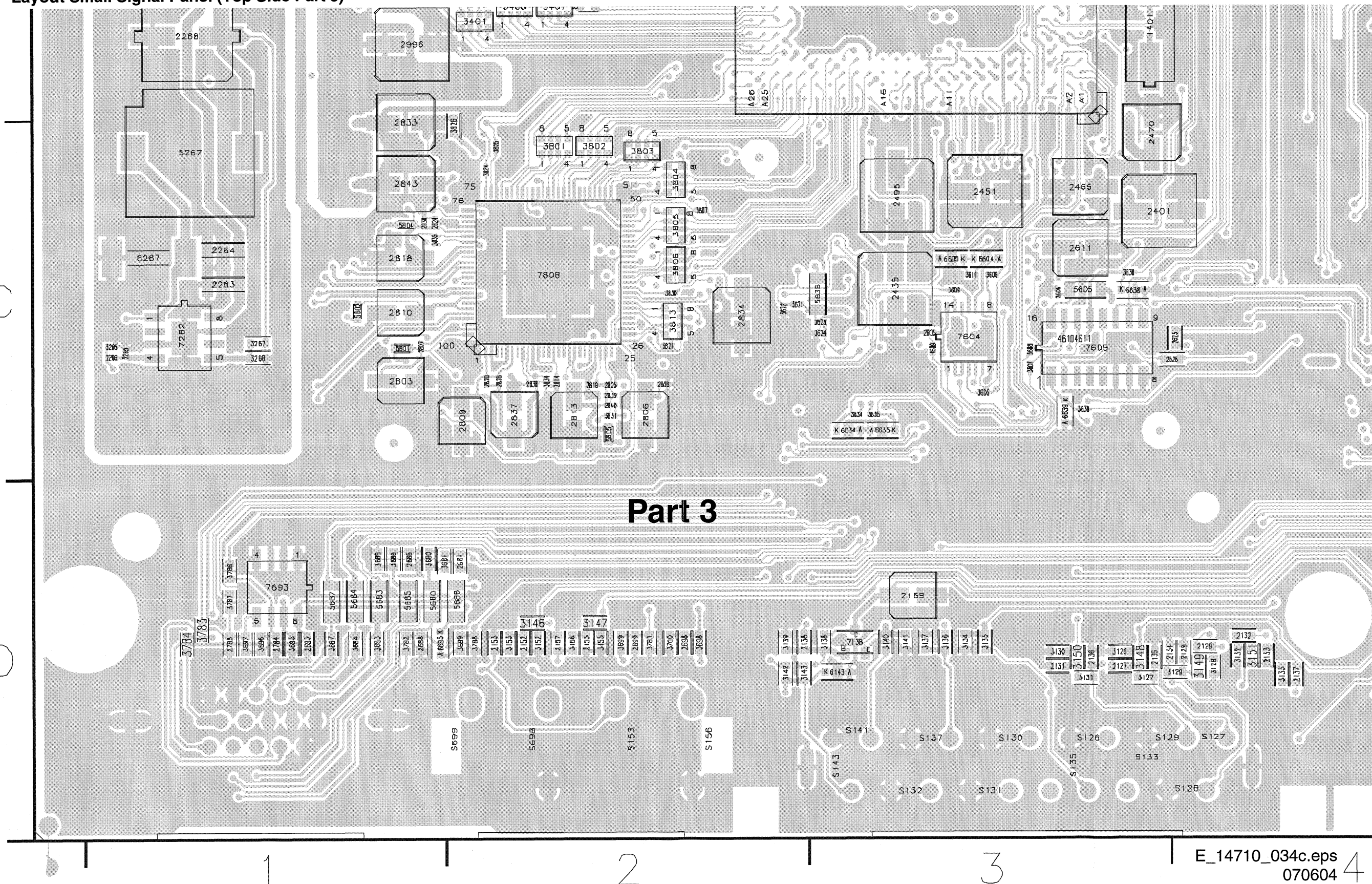
Layout Small Signal Panel (Top Side Part 1)



7

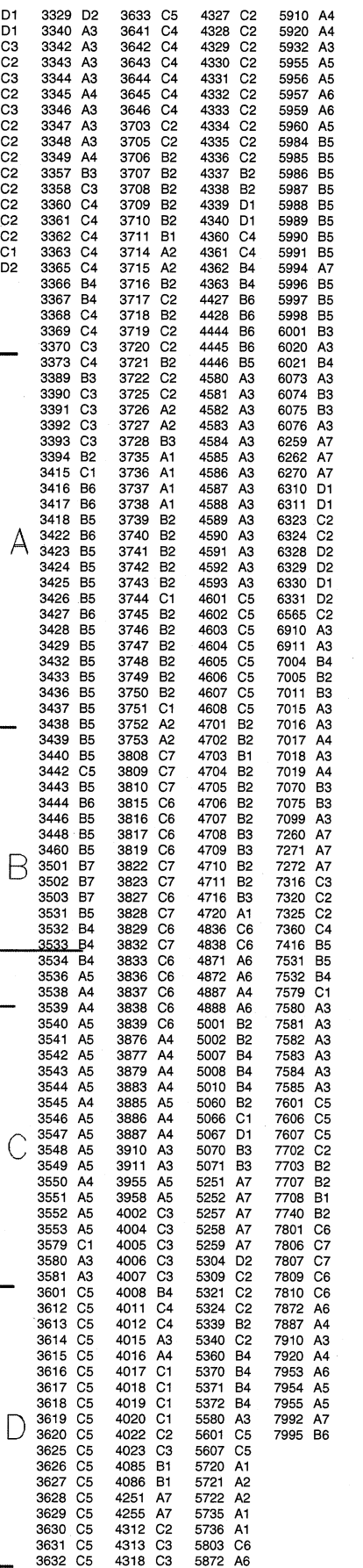


Layout Small Signal Panel (Top Side Part 3)



Part 4

1004	C4	2005	B2	2029	B4	2050	C1	2069	B1	2088	B1	2271	A7	2364	B4	2398	C3	2421	B5	2440	B5	2462	B6	2483	B5	2508	B6	2582	A3	2617	C5	2636	C5	2720	A1	2812	C7	2846	C6	2887	A4	3021	A3	3038	B1	3070	B3	3092	B3	3309	D1	3329	D2	3633	C5	4327	C2	5910	A4
1009	C3	2010	B2	2030	B4	2051	A3	2070	B3	2090	B1	2302	D1	2365	C4	2403	B5	2422	B5	2441	B5	2463	B5	2484	B5	2509	B6	2583	A3	2618	C5	2701	B1	2735	A1	2815	C6	2847	C6	2889	A5	3022	A3	3039	A3	3071	C4	3093	B4	3311	D1	3340	A3	3641	C4	4328	C2	5920	A4
1301	D2	2011	B2	2031	B4	2052	B4	2072	B3	2091	B1	2303	D1	2366	B4	2404	B5	2423	B6	2442	B5	2464	B5	2485	B5	2510	B6	2584	A3	2619	C5	2702	C2	2736	A1	2816	C6	2848	C6	2890	A3	3023	B1	3040	B4	3072	B1	3094	B4	3313	C3	3342	A3	3642	C4	4329	C2	5932	A3
1328	C2	2013	C3	2032	B4	2053	C4	2073	B3	2092	B1	2307	C2	2367	B4	2405	B5	2424	B6	2443	B5	2466	B5	2486	B5	2511	B6	2585	A3	2620	C5	2703	B2	2737	A1	2817	C6	2849	C7	2959	A6	3024	B1	3048	B4	3073	B3	3096	B3	3314	C2	3343	A3	3643	C4	4330	C2	5955	A5
1329	B2	2014	C3	2033	B4	2054	B2	2074	B3	2093	B1	2308	C1	2368	C4	2406	B5	2425	B6	2444	B5	2467	B5	2487	B5	2512	B7	2586	A3	2621	C5	2704	B2	2738	A1	2821	C6	2850	C6	2961	A6	3025	C1	3054	B4	3074	C3	3097	B3	3315	C3	3344	A3	3644	C4	4331	C2	5956	A5
1330	C2	2015	C3	2034	A3	2055	B4	2076	B3	2094	A1	2309	C2	2370	C3	2407	B5	2426	B6	2445	B5	2468	B5	2488	B5	2513	B7	2587	A3	2622	C5	2705	B2	2739	B2	2822	C6	2851	C6	2992	A6	3026	C1	3055	C4	3075	B3	3098	B4	3316	C2	3345	A4	3645	C4	4332	C2	5957	A6
1408	A5	2016	C3	2036	B1	2056	B4	2077	B3	2095	C1	2311	D2	2371	C3	2408	B5	2427	B6	2446	B6	2469	B5	2490	B5	2514	B7	2588	A3	2623	C5	2706	B2	2740	C2	2823	C6	2872	A6	2993	A7	3027	C1	3056	B3	3077	A3	3251	A7	3317	C3	3346	A3	3646	C4	4333	C2	5959	A6
1409	B7	2017	C3	2037	B1	2057	C1	2078	B4	2096	C1	2313	C2	2372	C3	2409	B5	2428	B6	2447	B5	2471	B5	2491	C5	2515	B7	2601	C5	2624	C4	2707	B1	2741	A2	2827	C6	2876	A4	2995	B6	3028	C4	3057	B3	3078	B3	3259	A7	3319	C2	3347	A3	3703	C2	4334	C2	5960	A5
1530	A5	2018	C3	2041	B4	2058	C1	2079	B1	2097	C1	2314	C2	2373	C3	2410	B5	2429	B6	2448	B5	2472	B5	2492	B5	2516	B7	2607	C5	2627	C5	2710	B1	2742	A2	2828	C6	2877	A4	3000	B2	3029	A4	3058	A4	3079	B3	3260	A7	3320	C2	3348	A3	3705	C2	4335	C2	5984	B5
1532																																																											



4



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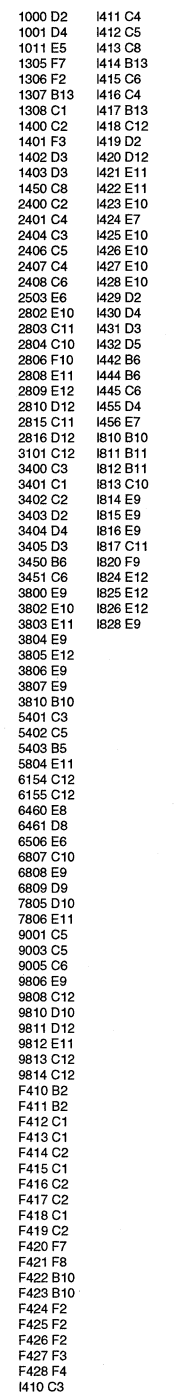
The image shows a detailed PCB layout for a microcontroller-based system, labeled "Part 3". The layout is divided into sections by a vertical line, with the left side labeled "Part 3" and the right side labeled "Part 4".

Key components and features include:

- Microcontroller:** A large component labeled "7560" is located in the upper right section.
- Integrated Circuits (ICs):** Several ICs are shown, including "1701", "1009", "1004", and "1000".
- Surface-Mount Components (SMDs):** A large array of SMDs is located in the lower right section, labeled "S101" through "S117".
- Dimensions:** Various dimensions are indicated, such as "3402", "1320", "1301", and "1681".
- Labels:** The layout includes labels for "I2C" and "UART" interfaces, and a "Part 3" label.

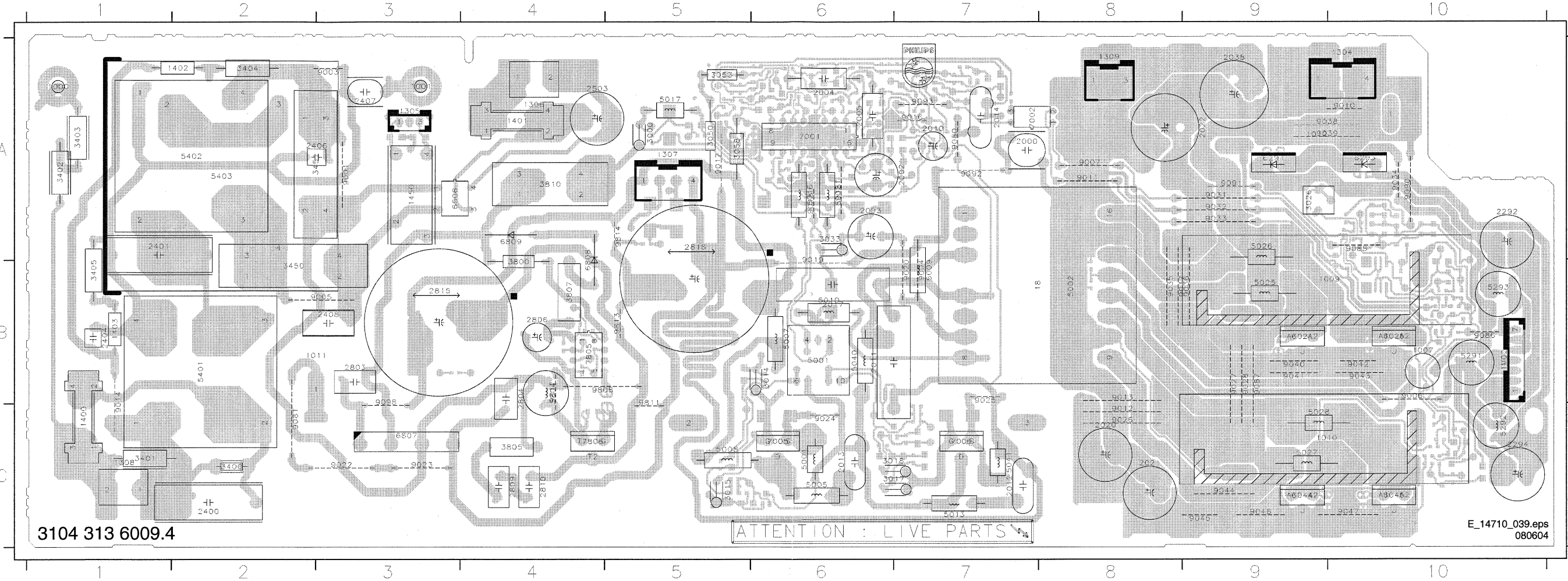
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070604

AS1 MAINS FILTER + STANDBY



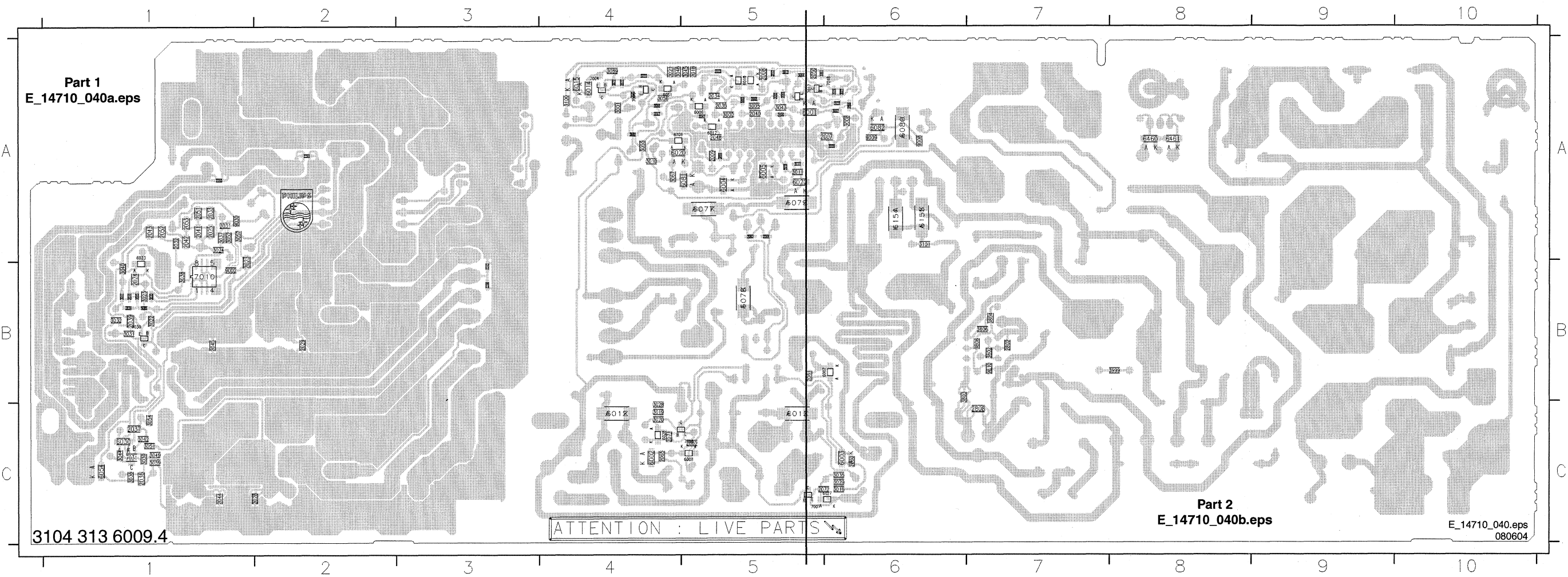
Layout PSU (30-32") (Top Side)

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1001 A3	1305 A3	1402 A2	2004 A6	2017 B6	2400 C2	2803 B3	3000 A5	3050 A5	3404 A2	3810 A4	5009 B7	5026 A9	5293 B10	6044 C10	6809 A4	9001 A3	9011 A8	9019 A6	9026 C8	9035 B8	9042 B10	9081 C2	9093 A7	
1007 B10	1306 A4	1403 B1	2005 A6	2020 C8	2401 B1	2804 B4	3014 B6	3053 A5	3405 B1	5001 B6	5010 B6	5027 C9	5401 B2	6045 C10	7001 A6	9003 A3	9012 C8	9020 B7	9027 B9	9036 B9	9043 B10	9086 B10	9098 B3	
1009 B9	1307 A5	1450 A3	2010 A7	2021 C8	2404 B1	2806 B4	3015 C5	3058 A5	3450 A2	5002 A7	5013 C7	5028 C9	5402 A1	6291 A9	7002 A8	9004 A7	9013 B8	9021 A6	9028 B9	9037 B8	9044 C9	9087 B9	9808 B5	
1010 C9	1308 C1	1M02 B10	2011 B7	2022 A8	2406 A3	2809 C4	3017 C7	3400 C2	3451 A3	5004 C6	5015 A6	5040 B6	5403 A3	6293 A10	7005 C6	9005 B3	9014 B1	9022 C3	9031 A9	9038 A9	9045 C9	9088 A10	9811 B5	
1011 C3	1309 A8	2000 A7	2012 C7	2038 A9	2407 A3	2810 C4	3018 C7	3401 C2	3800 A4	5005 C6	5016 A6	5041 C7	5804 B4	6506 A4	7006 C7	9006 C10	9016 A7	9023 C3	9032 A9	9039 A9	9046 C9	9090 A10	9812 B4	
1012 A9	1400 C1	2002 A7	2013 C6	2292 A10	2408 B3	2815 A3	3026 A9	3402 A1	3805 C4	5007 B6	5017 A5	5291 B10	6021 B9	6807 C3	7805 B4	9007 A8	9017 A5	9024 C6	9033 A9	9040 B9	9047 C10	9091 A9	9813 B5	



Layout PSU (30-32") (Overview Bottom Side)

2006 A5	2018 A5	2027 A6	2033 A1	2040 A5	2046 A4	2053 A1	2065 C4	2293 A1	3004 A5	3010 A4	3020 C4	3027 A6	3034 B1	3040 B1	3046 A4	3054 C1	3064 A5	3071 A4	3802 B7	6002 C4	6008 C5	6014 A4	6027 C6	6078 B5	6155 A6	7009 A4	9002 B1	9810 B7
2007 A6	2019 A5	2028 C2	2034 A5	2041 A1	2047 A5	2060 C6	2071 C4	2802 B7	3005 A5	3011 A5	3021 A4	3028 C4	3035 C6	3041 B1	3047 A4	3055 A4	3065 A6	3075 A4	3803 B6	6003 C6	6009 A4	6015 A4	6028 C4	6079 A5	6460 A8	7010 A1	9008 A6	
2008 A5	2023 B1	2029 B2	2035 A5	2042 A1	2048 A5	2061 B5	2072 C5	2808 C7	3006 A5	3012 A5	3022 B1	3029 C6	3036 C1	3042 C1	3048 A5	3056 A4	3066 A5	3089 A4	3804 B7	6004 A5	6010 A5	6017 A5	6030 C1	6080 A6	6461 A8	7017 A5	9009 A6	
2009 A5	2024 B1	2030 B1	2036 C1	2043 A1	2050 A5	2062 C5	2077 A4	3001 A4	3007 A6	3013 A5	3023 B1	3030 B1	3037 A1	3043 A5	3049 C1	3057 A1	3067 A4	3100 A4	3806 B7	6005 A5	6011 A5	6020 A4	6051 A4	6081 A4	7004 A4	7018 A6	9030 A1	
2015 A5	2025 A1	2031 A1	2037 C1	2044 C1	2051 A1	2063 A5	2290 B3	3002 A5	3008 A6	3016 C6	3024 A1	3031 B1	3038 B1	3044 C1	3051 C1	3059 C1	3068 A4	3101 A6	3999 B8	6006 A5	6012 B4	6022 A5	6054 C1	6082 A6	7007 C5	7030 B1	9085 B1	
2016 A5	2026 A6	2032 A1		2045 B1	2052 A1	2064 A5	2291 A2	3003 A5	3009 A6	3019 C4	3025 B1	3032 B1	3039 C1	3045 A5	3052 A1	3061 A5	3070 A4	3292 B3	6001 A5	6007 B6	6013 C5	6023 A1	6077 A5	6154 A6	7008 C5	7031 C1	9806 B7	



Part 1

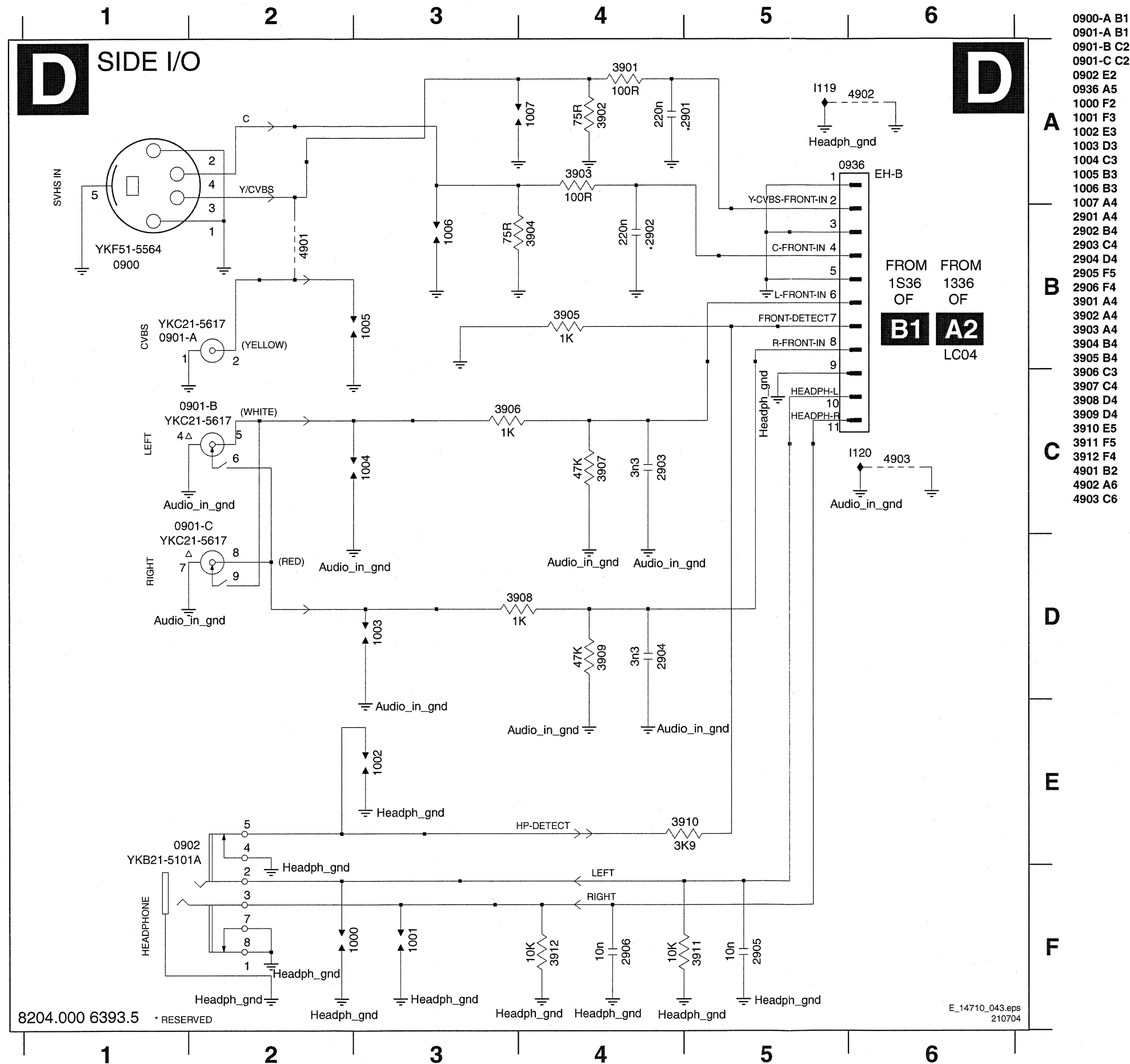


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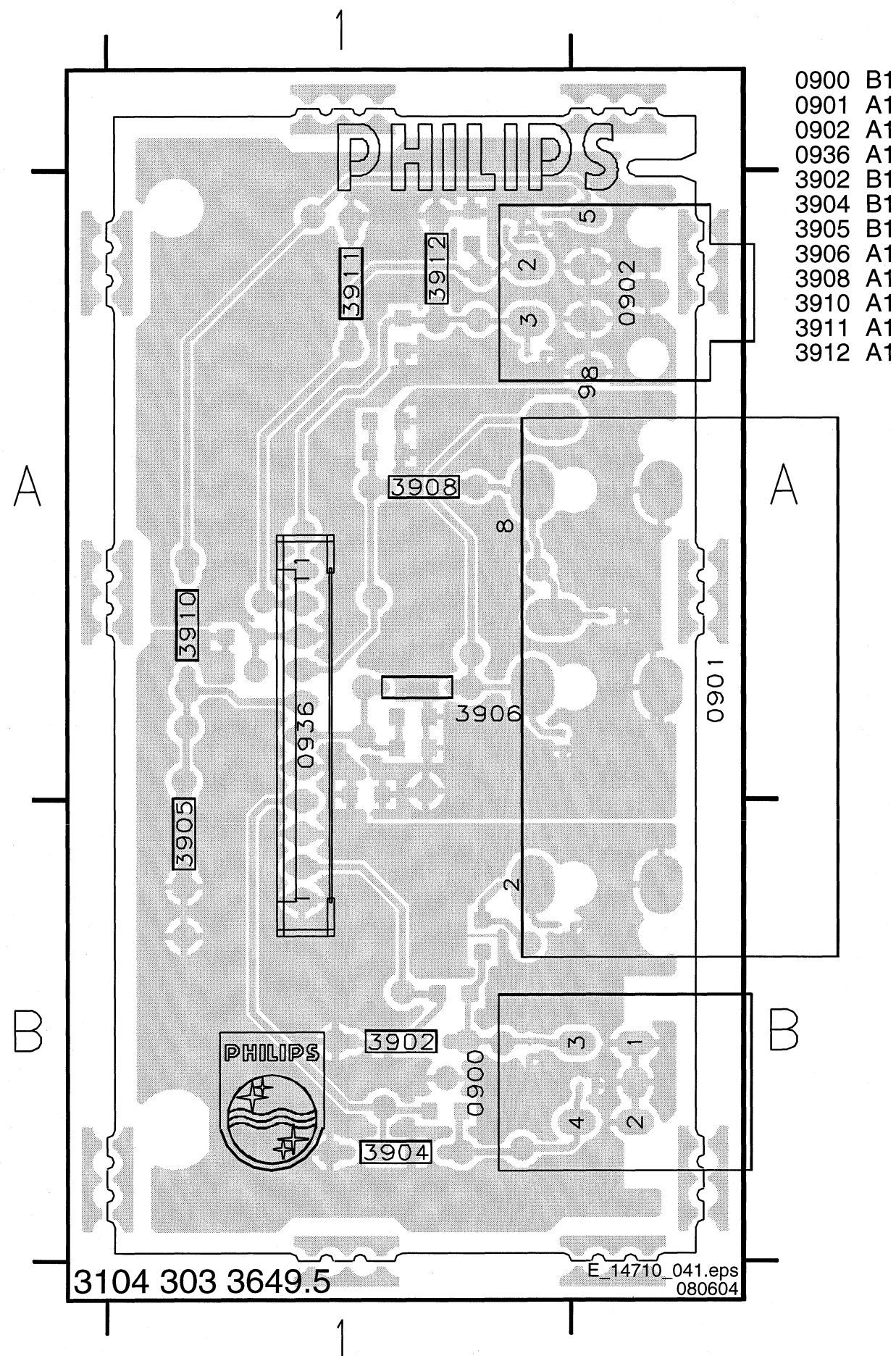
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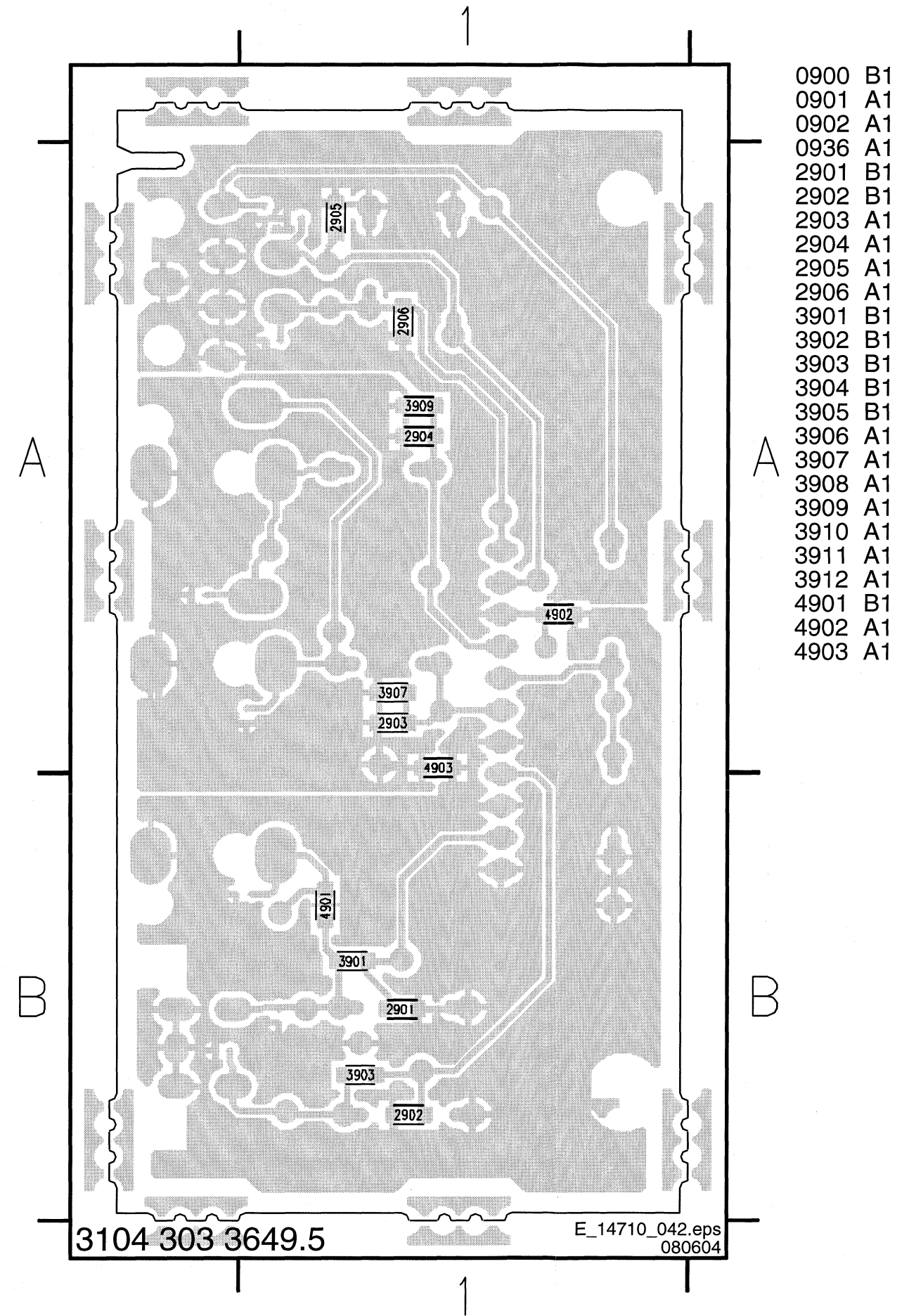
Side I/O Panel



Layout Side I/O Panel (Top Side)

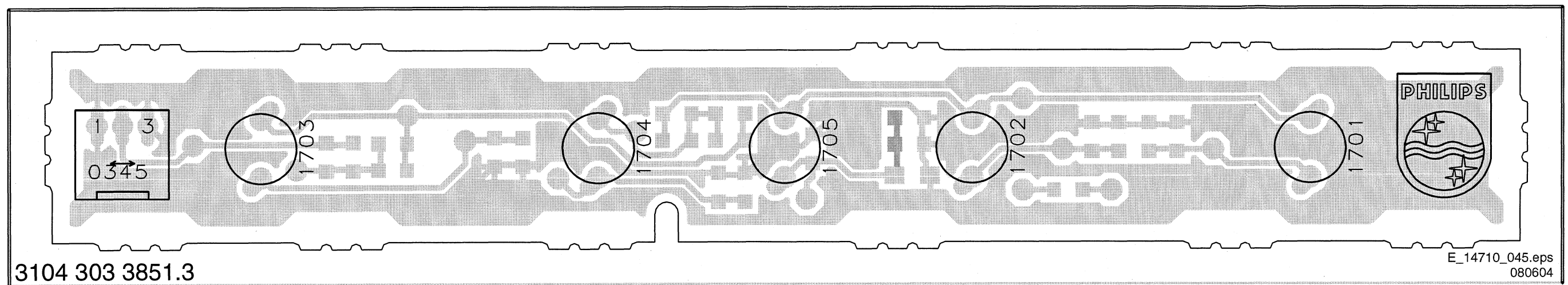


Layout Side I/O Panel (Bottom Side)

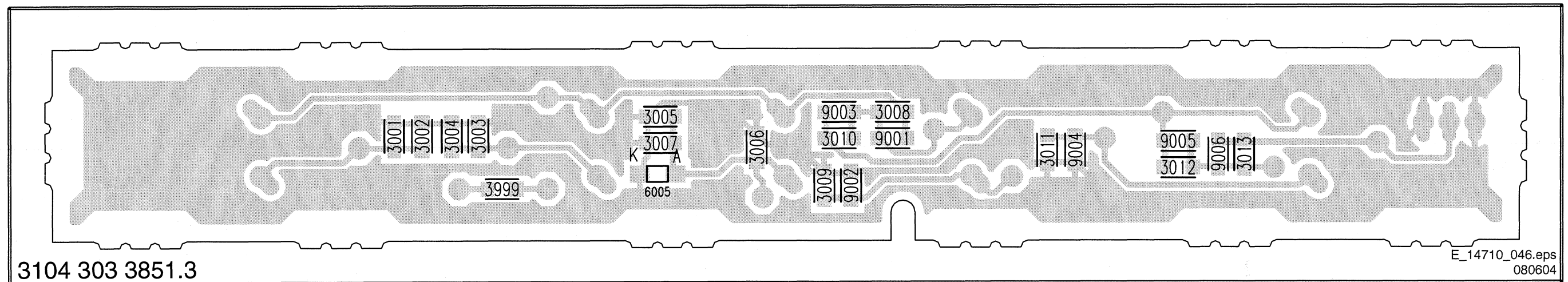


Layout Top Control Panel (Top Side)

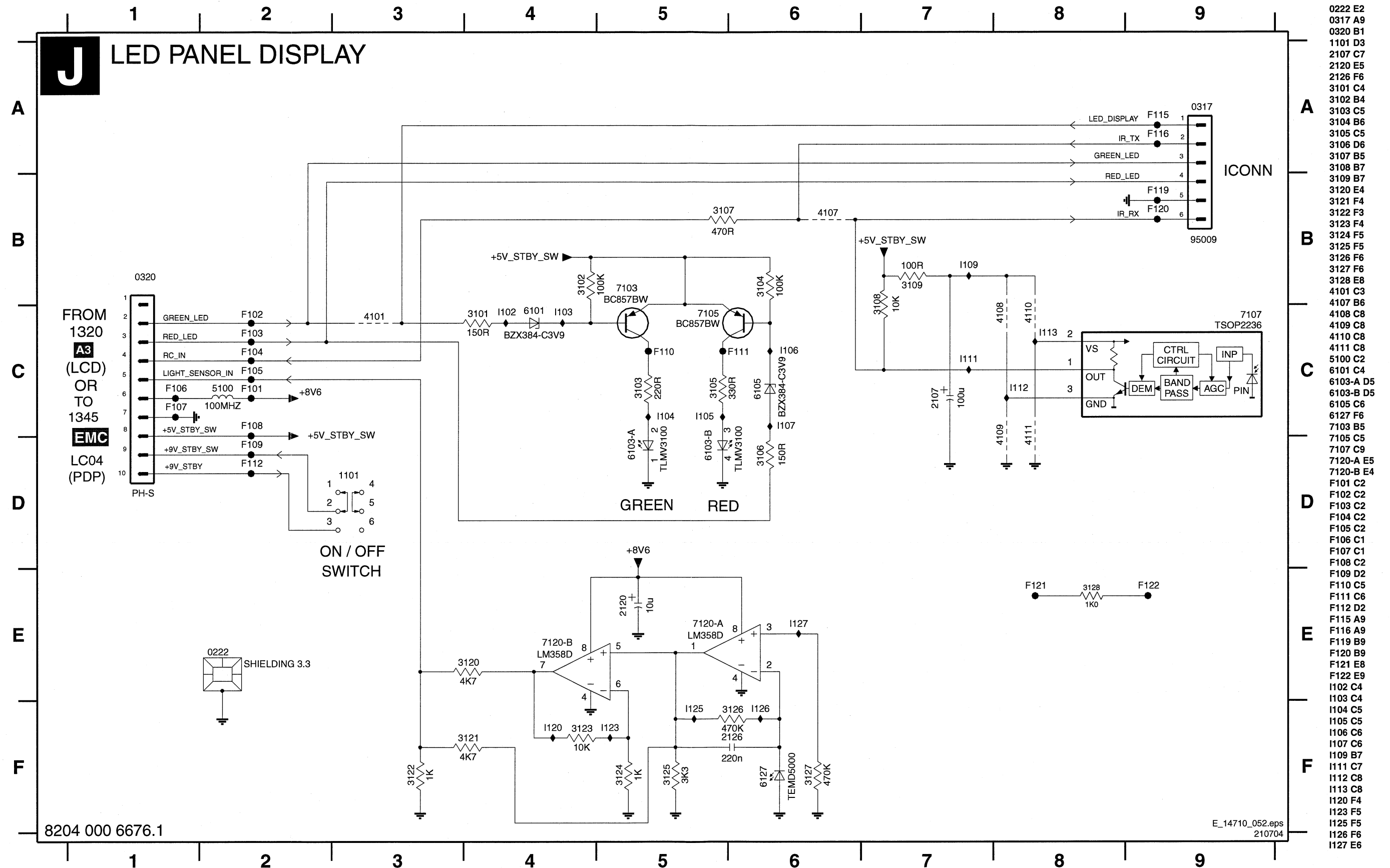
0345 1701 1702 1703 1704 1705



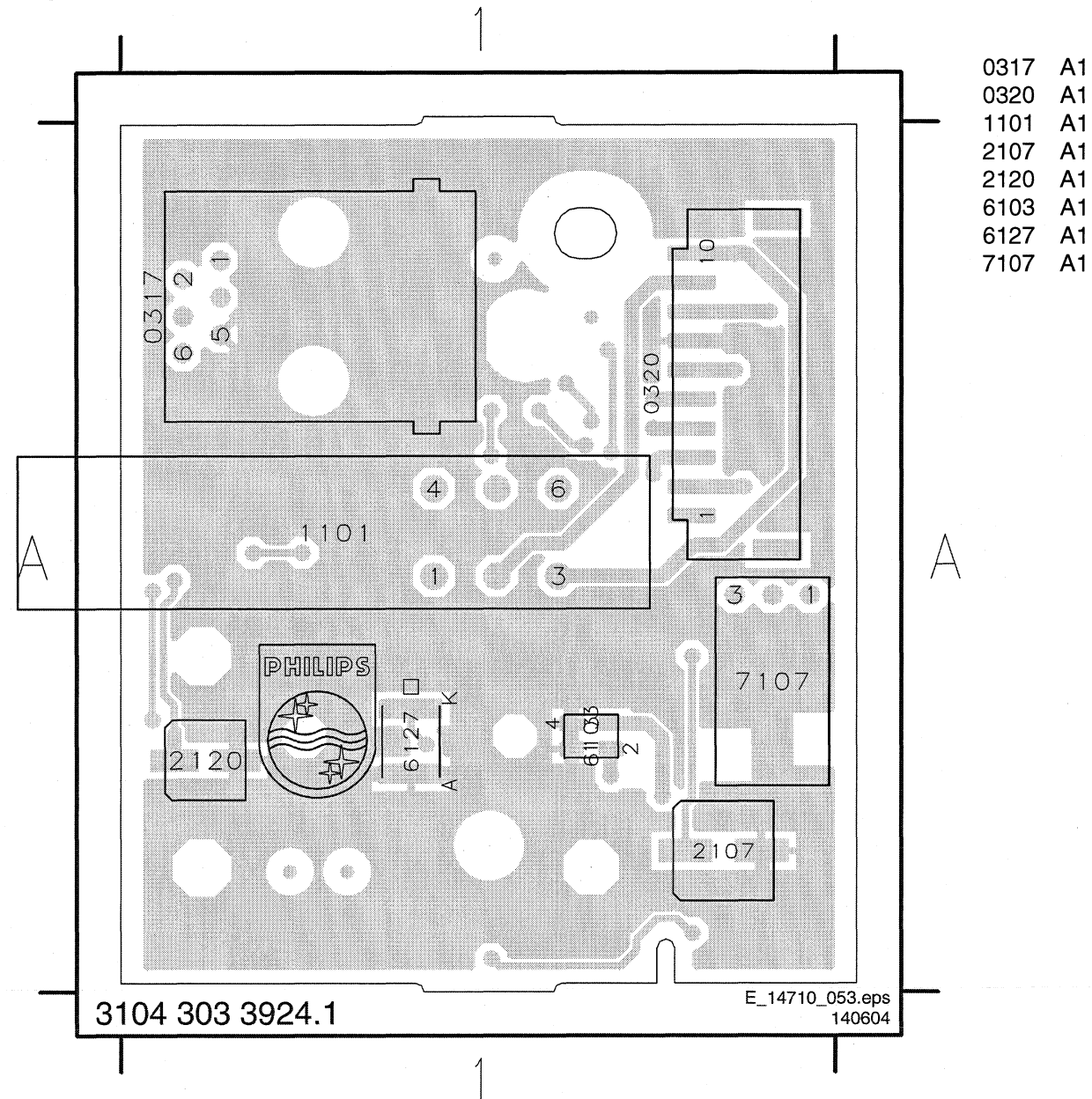
Layout Top Control Panel (Top Side)

3001 3003 3005 3007 3009 3011 3013 6005 9002 9004 9006
3002 3004 3006 3008 3010 3012 3999 9001 9003 9005

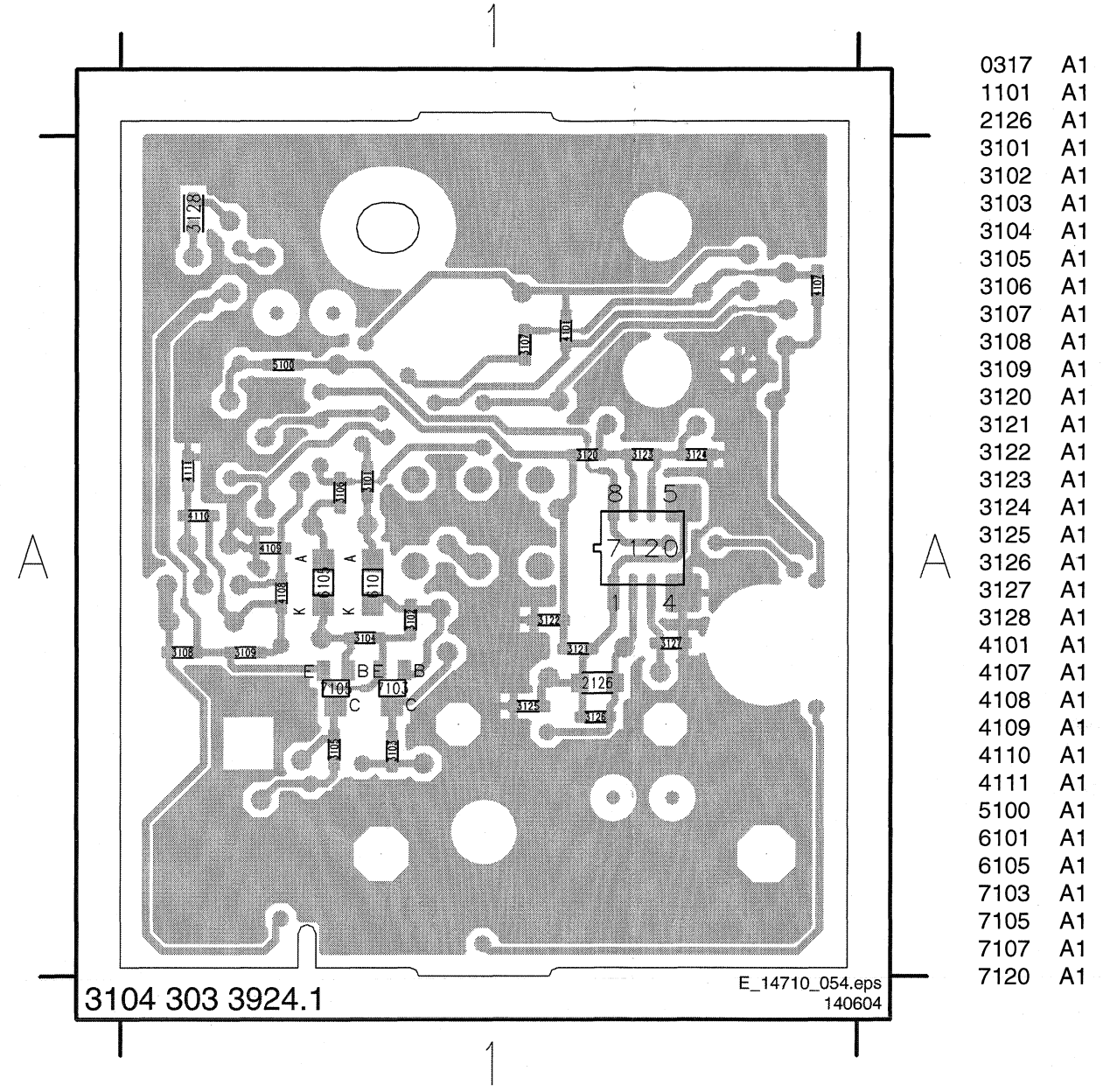
LED and Switch Panel



Layout LED and Switch Panel (Top Side)



Layout LED and Switch Panel (Bottom Side)

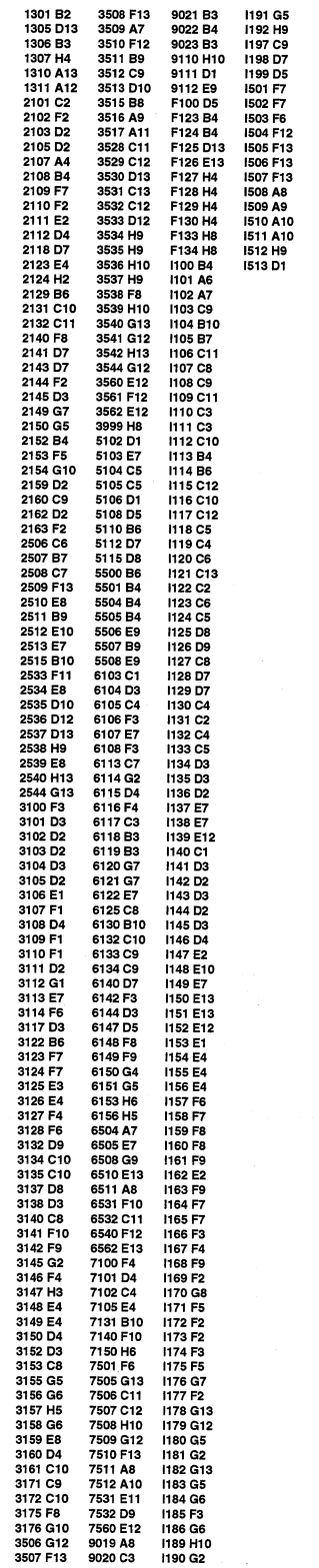


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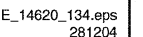
0001 E1
1303 A9
1304 B9
1309 D9
1312 A8
1313 A7
1314 B1
1315 B2
1316 A3
1317 A4
1318 A5
1320 B9
1M03 B7
1M10 A9
1M46 D7
3190 D9
3191 D9
3192 D9
5018 C8
5019 D8
9001 E6
9002 B5
9003 B5
9004 C8
9005 D8
9006 C9
9007 C9
9008 A5
9009 A5
9010 C8
9011 D8
9018 B10
9113 B6
F101 B10
F102 A8
F103 A9
F104 A7
F105 A7
F106 A7
F107 B7
F108 B10
F109 E6
F110 B9
F111 B6
F112 D10
F113 B6
F114 E6
F115 B6
F117 E6
F119 B7
F120 C8
F121 B6
F122 C6
F131 D6
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F135 D6
F136 D6
F137 A5
F138 B5
F139 C6

SA 2 STANDBY

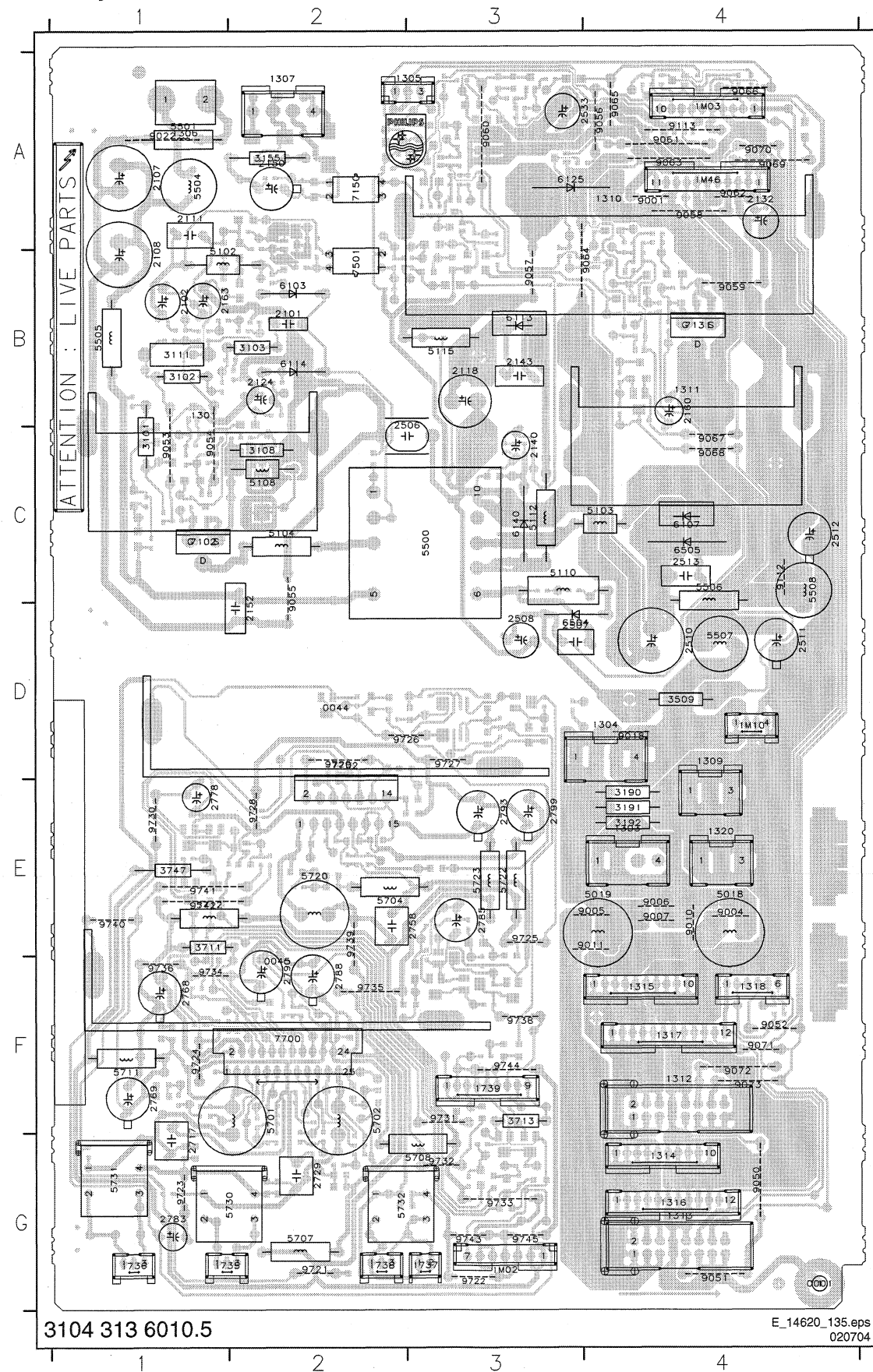
SA 2



0044 F13	2705 A7	2715 F4	2726 E3	2758 G9	2780 E5	2790 E2	3701 E6	3711 D5	3722 C2	3744 G12	3755 B10	3765 C12	3796 E11	5711 D5	6703 C12	7706 C6	7715-2 C11	7720 G8	F743 B9	I703 B6	I713 E4	I723 B9	I733 C10	I743 C12	I753 B3	I763 C6	I773 F9	I784 B3	I795 F6
0045 B2	2706 B4	2716 E4	2727 E3	2759 F8	2781 D5	2791 C7	3702 B6	3712 D5	3723 C2	3746 C6	3756 F4	3766 B14	3797 C5	5712 D5	6704 B6	7707 C5	7717 B5	7721 G2	F745 B9	I704 A6	I714 C8	I724 D3	I734 F12	I744 D5	I754 E3	I764 C13	I774 F9	I785 B4	I796 C12
1736 F2	2707 C4	2717 G4	2728 E3	2762 E13	2782 D12	2792 C8	3703 A6	3713 D7	3724 F2	3747 C6	3757 G3	3767 B12	3798 D3	5720 F3	6705 C12	7708 C13	7718 B13	7722 F22	F745 A9	I705 D8	I715 A7	I725 E2	I735 D8	I745 B4	I755 F4	I765 D13	I775 E4	I786 B4	I797 C12
1736 G2	2708 A3	2718 E3	2729 F3	2763 A5	2783 D11	2793 D13	3704 B6	3714 D6	3725 F2	3748 C6	3758 C10	3768 C12	3799 D3	5721 F3	6706 C12	7709 C13	7719 B13	7723 F2	F746 A9	I706 D8	I716 A7	I726 E2	I736 D8	I746 B4	I756 F4	I766 D13	I776 E4	I787 B4	I798 C12
1737 F2	2709 A3	2719 F12	2730 F2	2764 A5	2784 D13	2794 D13	3705 C3	3715 D6	3726 F2	3749 C6	3759 D8	3769 C12	3799 D3	5722 D13	7700 C5	7710 B13	7720 G2	F736 F7	F746 G5	I707 D5	I717 B5	I727 B5	I737 C6	I747 D11	I757 D2	I767 F2	I777 E5	I788 C7	I799 E4
1738 F7	2710 D6	2720 B3	2731 F13	2768 E5	2785 B13	2795 D12	3706 E6	3716 B6	3727 F5	3750 G3	3760 E8	3770 C3	3799 D3	5703 B5	7701 B7	7711 B3	F711 A2	F737 F6	F746 G6	I708 F12	I718 B5	I728 C5	I738 C6	I748 B3	I758 E11	I768 G3	I778 C3	I789 C3	I790 F3
1739 F5	2711 E2	2721 C2	2732 E3	2769 D5	2786 B4	2796 C10	3707 D6	3717 A6	3728 G9	3751 G8	3761 A12	3771 B3	3799 D3	5704 F7	7702 E11	7712 D3	F712 A2	F738 F2	F751 F6	I709 E4	I719 E3	I729 C5	I739 B6	I749 C3	I759 E11	I769 F3	I779 C3	I789 E3	I791 B12
1740 F2	2712 E5	2722 D2	2733 F2	2770 E5	2787 B4	2797 C12	3708 E6	3718 B6	3729 F2	3752 G3	3762 B12	3772 C3	3799 D3	5705 B6	7703 F9	7713 B9	F713 A2	F739 F2	F752 G5	I710 D8	I720 C5	I730 B6	I740 B3	I750 E11	I760 F3	I770 C3	I780 C3	I790 F3	I791 B12
2702 C4	2713 B7	2723 F8	2735 D11	2778 C5	2788 D2	2798 E8	3709 F5	3720 F7	3741 F12	3753 C8	3763 B12	3774 C11	3799 D3	5707 D2	6701 C6	7704 B5	7714 C5	F741 F8	I701 E6	I711 C4	I721 C3	I731 B11	I741 E9	I751 A12	I761 F8	I771 G3	I782 C13	I793 B3	I794 B12
2704 C4	2714 E4	2725 F6	2735 E11	2779 E3	2789 D2	2799 D13	3710 E4	3721 B2	3743 F4	3754 C8	3764 C12	3795 C5	3799 D3	5708 E2	6702 B12	7705 B6	7715 C9	F718 D10	I702 A6	I712 A5	I722 B3	I732 B6	I742 C12	I752 E13	I762 D11	I772 F8	I783 B3	I794 B12	I795 F6

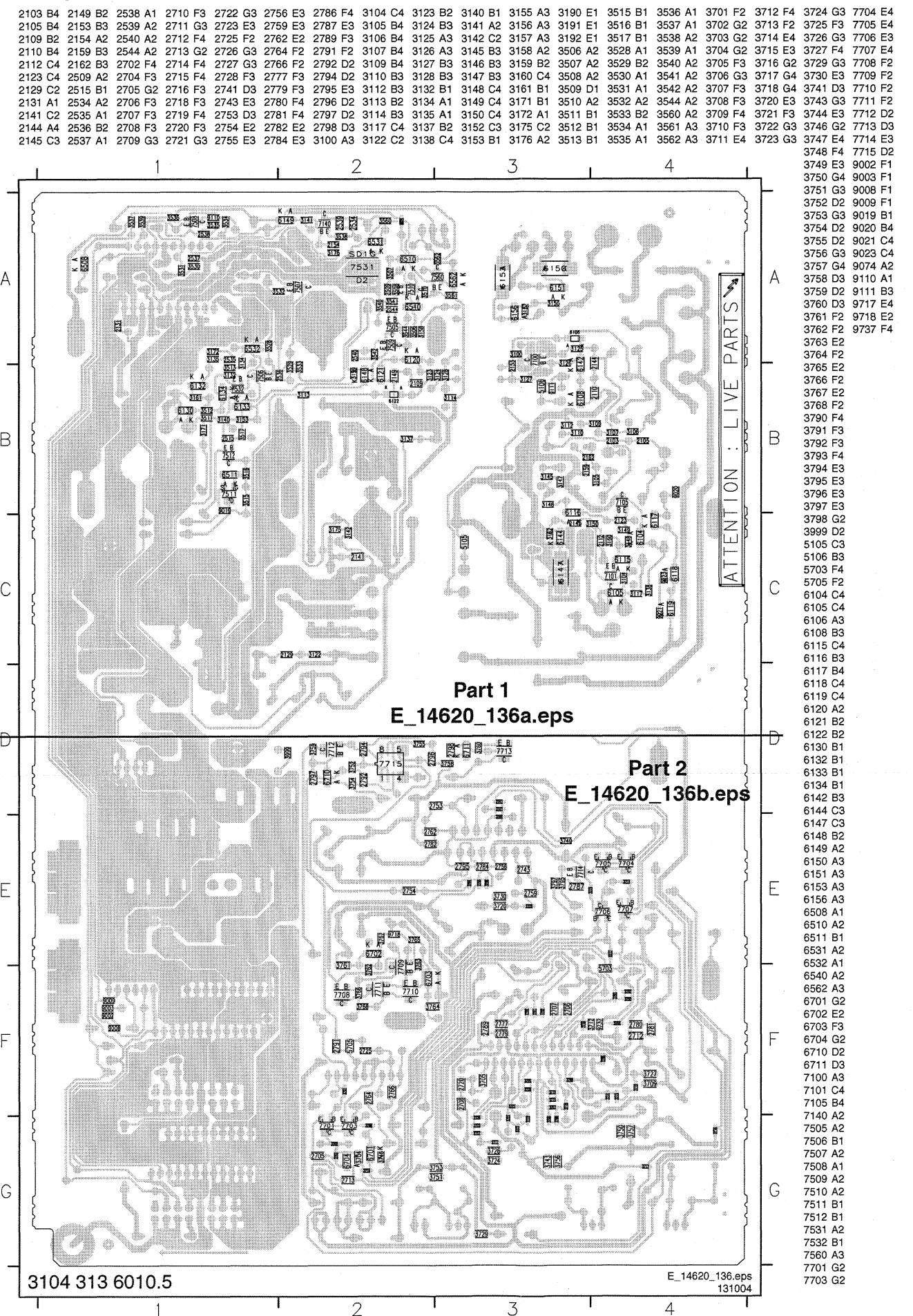


Layout LCD Standby Audio Panel (Top Side)

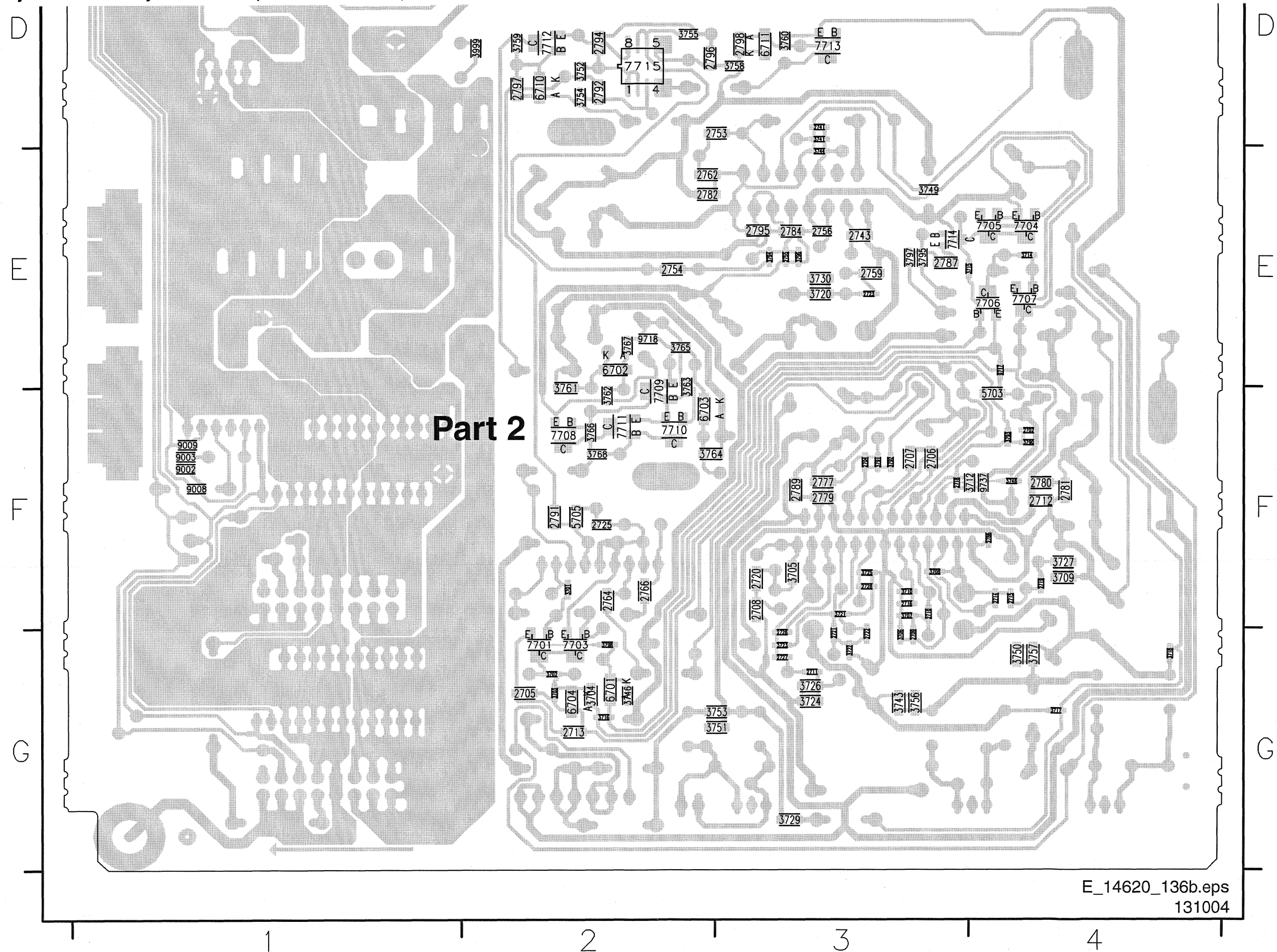


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0045 E1	5701 F2
1301 B1	5702 F2
1303 E4	5704 E2
1304 D4	5707 G2
1305 A3	5708 G3
1306 A1	5711 F1
1307 A2	5712 E1
1309 D4	5720 E2
1310 A3	5722 E3
1311 B4	5723 E3
1312 F4	5730 G2
1313 G4	5731 G1
1314 G4	5732 G3
1315 F4	6103 B2
1316 G4	6107 C4
1317 F4	6113 B3
1318 F4	6114 B2
1320 E4	6125 A3
1735 G1	6140 C3
1736 G1	6504 D3
1737 G3	6505 C4
1738 G2	7102 C1
1739 F3	7131 B4
1M02 G3	7150 A2
1M03 A4	7501 B2
1M10 D4	7700 F2
1M46 A4	7702 E3
2101 B2	9001 A4
2102 B1	9004 E4
2107 A1	9005 E4
2108 A1	9006 E4
2111 A1	9007 E4
2118 B3	9010 E4
2124 B2	9011 E4
2132 A4	9018 D4
2140 C3	9022 A1
2143 B3	9050 G4
2150 A2	9051 G4
2152 D2	9052 F4
2160 B4	9053 B1
2163 B1	9054 B1
2506 B2	9055 C2
2507 D3	9056 A4
2508 D3	9057 A3
2510 D4	9058 A4
2511 D4	9059 B4
2512 C4	9060 A3
2513 C4	9061 A4
2533 A4	9062 A4
2717 F1	9063 A4
2729 G2	9064 A3
2758 E3	9065 A4
2768 F1	9066 A4
2769 F1	9067 C4
2778 E1	9068 C4
2783 G1	9069 A4
2785 E3	9070 A4
2788 F2	9071 F4
2790 E2	9072 F4
2793 E3	9073 F4
2799 E3	9112 C4
3101 B1	9113 A4
3102 B1	9721 G2
3103 B2	9722 G3
3108 C2	9723 G1
3111 B1	9724 F1
3155 A2	9725 E3
3190 E3	9726 D2
3191 E3	9727 D3
3192 E3	9728 E2
3509 D4	9729 D2
3711 F1	9730 E1
3713 F3	9731 F3
3747 E1	9732 G3
5018 E4	9733 G3
5019 E4	9734 F1
5102 B2	9735 F3
5103 C4	9736 F1
5104 C2	9738 F3
5108 C1	9739 F2
5110 C3	9740 E1
5112 C3	9741 E1
5115 B3	9742 E1
5500 C3	9743 G3
5501 A1	9744 F3
5504 A1	9745 G3
5505 B1	
5506 C4	

Layout LCD Standby Audio Panel (Overview Bottom Side)



Layout LCD Standby Audio Panel (Part 2 Bottom Side)



This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments
- 8.4 Option Settings

Note: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage (depends on region):
 - AP-NTSC: 120 V_{AC} or 230 V_{AC} / 50 Hz (± 10%).
 - AP-PAL-multi: 120 - 230 V_{AC} / 50 Hz (± 10%).
 - EU: 230 V_{AC} / 50 Hz (± 10%).
 - LATAM-NTSC: 120 - 230 V_{AC} / 50 Hz (± 10%).
 - US: 120 V_{AC} / 60 Hz (± 10%).
 - Connect the set to the mains via an isolation transformer with low internal resistance.
 - Allow the set to warm up for approximately 15 minutes.
 - Measure voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
- Caution:** never use heatsinks as ground.
- Test probe: R_i > 10 Mohm, C_i < 20 pF.
 - Use an isolated trimmer/screwdriver to perform alignments.

8.1.2 Initial Settings

Perform all electrical adjustments with the following initial settings:

1. To avoid the working of the lightsensor, set "Active Control" to "Off" (via the "Active Control" button on the RC).
2. Set "Smart Picture" to "Natural" or "Soft" (via the "Smart Picture" button on the RC).

8.1.3 Alignment Sequence

- First, set the correct options:
 - In SAM, select OPTIONS,
 - Fill in the option settings according to the set sticker (see also paragraph "Option Settings"),
 - Store the OPTIONS by switching the set to STAND-BY.
- Warming up (>15 minutes).
- White-D alignment.

8.2 Hardware Alignments

8.2.1 Backlight Voltage Alignment

Switch the set "on" and measure the voltage between pin 3 (or 4) of connector 1304 (on MF panel) and ground. Align R3026 until this voltage is 12.2 V_{DC} +/- 0.1 V.

Caution: This voltage must be aligned very precisely (within 1%): when it is too high, it can destroy the inverters. When it is too low, the backlight will not start up.

8.3 Software Alignments

With the software alignments of the Service Alignment Mode (SAM) the geometry, white tone and tuner (IF) can be aligned. To store the data: Use the RC button Menu to switch to the main menu and next, switch to 'Stand-by' mode.

For the next alignments, supply the following test signals via a video generator to the RF input:

- **EU/AP-PAL** models: a PAL B/G TV-signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz
- **US/AP-NTSC** models: an NTSC M/N TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).

8.3.1 SAM Menu

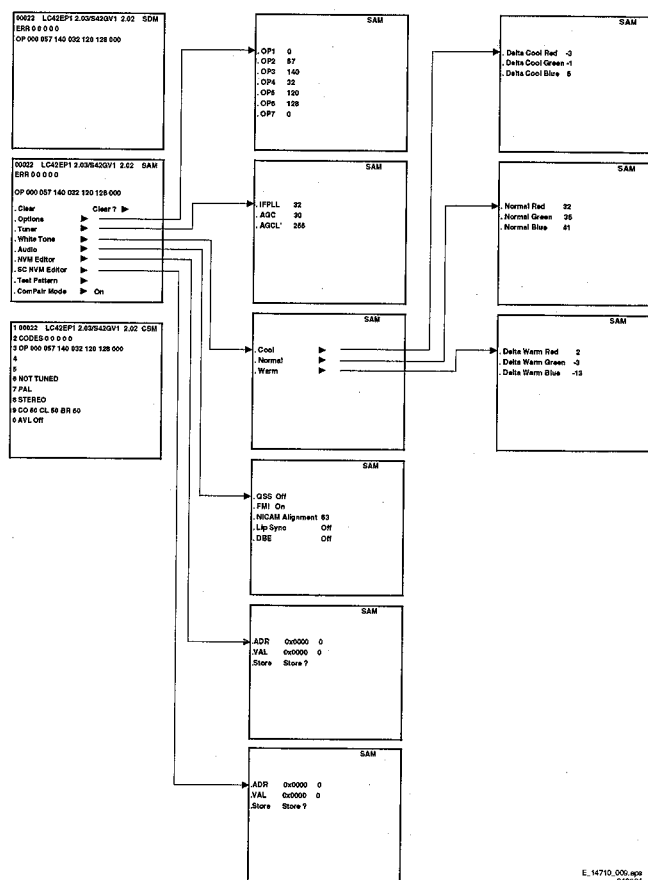


Figure 8-1 Overview SAM menu (example from EU set).

8.3.2 White Tone

Method 1 (with colour analyser):

1. Supply a 100% white uniformity test signal (100 IRE white) to the tuner.
2. Enter SAM menu (colour features are switched "off" automatically).
3. Do NOT change the SMART PICTURE, ACTIVE CONTROL, and CONTRAST+ settings to prevent activating of Green Enhancement, Blue Stretch, and Black Stretch.

Offset values in NVM are used for HD-, HDMI-, and VGA mode, therefore only the settings in TV mode need to be set.

Make the following settings in the normal **user menu**, when the television is in TV Mode:

Table 8-1 User menu settings for White Tone alignment

	LCD (AUO)	LCD (LPL)	Plasma (SDI)
CONTRAST	99		
BRIGHTNESS	42 (EU) 44 (US)	46	46 (AP+EU) 48 (US+LA)
COLOR/SAT.	50 (AP+LA+US) 60 (EU)		

Go to WHITE TONE in SAM and set NORMAL GREEN to:

Table 8-2 Service menu settings for White Tone alignment

	LCD (AUO)	LCD (LPL)	Plasma (SDI)
NORM. GREEN	200		180

1. Measure with a calibrated (phosphor- independent) colour analyser (e.g. Minolta CA-200) in the centre of the screen (use a contact less analyser, e.g. Minolta CA-210, to align the LCD TV). The analyser may not touch the screen, and the measurement must be done in a dark environment.
Note: The colour analyser must be calibrated for the LCD or Plasma panel in question. See the manual of the colour analyser for the procedure on how to perform this calibration.
2. Leave the value with the lowest output on the initial value.
3. Align the NORMAL white points, by lowering the other two colours, to the right x-y coordinates (see table "White Tone alignment values").
Note: To prevent clipping of the colour, these values must only be lowered!

Table 8-3 White Tone alignment values

	NORMAL colour temp. (all regions)
X	0.289
Y	0.299

Only the values for NORMAL are aligned with X, Y values. The delta values for COOL and WARM are given below.

Table 8-4 Fixed delta values

Screen Type	Colour temp.	RED	GREEN	BLUE
LCD (AUO)	DELTA COOL	-3	-12	+10
	DELTA WARM	+5	-5	-20
LCD (LPL)	DELTA COOL	-8	-12	+3
	DELTA WARM	+2	-10	-21
Plasma (SDI)	DELTA COOL	-6	-10	+5
	DELTA WARM	+4	-5	-19

After the alignment is finished, switch the set to STANDBY, in order to store the alignments.

Note: When disconnecting the power before doing this, the settings will not be stored.

Method 2 (without colour analyser):

If you do not have a colour analyser, you can use the default values. These values are based on the average values in production.

- Set the values for the NORMAL colour temperature. Given in the table "Average statistical values for NORMAL" from production.

- Set the delta values for the COOL and WARM mode. See table: "Fixed delta values."

After the alignment is finished, switch the set to STANDBY, in order to store the alignments.

Note: When disconnecting the power before doing this, the settings will not be stored.

Table 8-5 Average statistical values for "NORMAL"

Display type	Colour Temp.	RED	GREEN	BLUE
LCD (AUO)	NORMAL	165	182	200
LCD (LPL)	NORMAL	200	195	190
Plasma 37" (SDI)	NORMAL	174	180	178
Plasma 42" (SDI)	NORMAL	173	180	172

Note: Values are valid for all regions

8.3.3 Tuner Adjustment

AGC (RF AGC Take Over Point)

Set pattern generator (e.g. PM5580) with colour bar pattern and connect to aerial input with RF signal amplitude -10 mV and set frequency for NTSC to 61.25 MHz (channel 3).

- Activate the SAM-menu. Go to the sub-menu TUNER, select the sub-menu option AFC WINDOW and adjust the value to "100 kHz".
- Select the AGC sub-menu.
- Connect a DC multi-meter to test point F306 or pin 1 of the tuner.
- Adjust the AGC until the voltage at pin 1 of the tuner is 3.3 V +0.5 / -1.0.
- The value can be increased or decreased by pressing the RIGHT/LEFT cursor button on the RC.
- Switch the set to STAND-BY to store the data.

8.3.4 Grey Scale Adjustment

SDTV Grey Scale Adjustment

Equipment and setting

- E.g. Fluke 54200 or Philips PM5580.
- 100% "8-step grey scale" pattern.

Alignment Method

- Switch with the RC to TV mode,
- Press the MUTE button on RC,
- Set SMART PICTURE to SOFT mode,
- Activate the auto colour function by pressing key-sequence:
INFO - MUTE - MUTE - MUTE - INFO - MENU - INFO.

Expected Results

- Visual check if the 8 Grey levels are correct.

Analog PC Grey Scale Adjustment

Equipment and setting

- Quantum Data 802B.
- PC input signal, with 64 levels Grey scale pattern, 1024x768 @ 60 Hz (Format= 81:DMT1060, Pattern= 123:Grey 64).
- PC input at D-sub VGA connector.

Alignment Method

- Switch with the RC to PC mode.
- Press the MUTE button on RC.
- Set BRIGHTNESS and CONTRAST to nominal "50".
- Activate the auto colour function by pressing key-sequence:
INFO - MUTE - MUTE - MUTE - INFO - MENU - INFO.

Expected Results

- Visual check if the 64 Grey levels are correct.

HD Grey Scale Adjustment*Equipment and setting*

- Quantum Data 802B.
- HD input signal, Top half 100% colour bar and bottom half Grey scale pattern, 1920x1080i @ 60 Hz YPbPr (Format= 1080i30, Pattern= HDBar100).
- HD input at D-sub VGA connector.

Alignment Method

- Switch with the RC to HD mode.
- Press the MUTE button on RC.
- Activate the auto colour function by pressing key-sequence:
INFO - MUTE - MUTE - MUTE - INFO - MENU - INFO.

Expected Results

- Visual check if Colour bar tint and Grey scale is correct.

8.3.5 Sound

No adjustments needed for sound.

8.4 Option Settings

Options are used to control the presence/absence of certain features and hardware.

See for an overview, the table on the next page.

8.4.1 How to change an Option Byte

An Option Byte represents a number of different options. Changing these bytes directly makes it possible to set all options very fast. All options are controlled via seven option bytes. Select the option byte (OP1.. OP7) with the cursor UP/DOWN keys, and enter the new value.

Leaving the OPTION sub menu saves the changes in the Option Byte settings. Some changes will only take effect after the set has been switched "off" and "on" with the AC power switch (cold start).

Table 8-6 Option codes (general overview for all regions and displays)

Bit (DEC)	Option	Description	/78 (LATAM)	/61 (AP- NTSC)	/69,79,98 (AP-PAL)	/93 (China)	/10, /12 (Europe)	/17, /37 (NAFTA)	Remarks
7 (128)	OP_PHILIPS_TUNER	Philips Tuner available	1	1	1	0	1	1	
6 (64)	OP_FM_RADIO	FM Radio available	0	0	0	0	0	0	
5 (32)	OP_LNA	Low Noise Amplifier available	0	0	0	0	0	0	
4 (16)	OP_ATS	Auto Tuning System	0	0	0	0	1	0	
3 (8)	OP_ACI	ACI	0	0	0	0	1	0	
2 (4)	OP_UK_PNP	After virgin = English + Great Britain	0	0	0	0	0	0	
1 (2)	OP_VIRGIN_MODE	Activate Plug & Play menu at start-up	0	0	0	0	0	0	
0 (1)	OP_CHINA	AP-PAL tuning algorithm for China	0	0	0	1	0	0	
OP1:			128	128	128	1	152	128	
7 (128)	OP_SMART_SOUND	Four smart sound settings	1	1	1	1	1	1	
6 (64)	OP_UI_GREEN	UI for Magnavox sets (NAFTA)	0	0	0	0	0	0	
5 (32)	OP_CHANNEL_NAMING	Naming of channel feature available	1	1	1	1	0	1	
4 (16)	OP_LTI	Histogr. algorithm available (TDA9178)	1	1	1	1	1	1	
3 (8)	OP_TILT	Picture Rotation available	0	0	0	0	0	0	
2 (4)	OP_FINE_TUNING	Fine Tuning algorithm available	1	1	1	1	1	1	
1 (2)	OP_PIP_PHILIPS_TUNER	PIP Philips tuner	0	0	0	0	0	0	
0 (1)	OP_HUE	Tint for NTSC transmission	1	1	1	1	0	1	
OP2:			181	181	181	181	148	181	
7 (128)	OP_EW_FUNCTION	Geometry adj. for Large screen sets	0	0	0	0	0	0	
6 (64)	OP_2TUNER_PIP	Double Tuner for PIP available	0	0	0	0	0	0	
5 (32)	OP_PIP_SPLITTER	Not used	0	0	0	0	0	0	
4 (16)	OP_SPLITTER	Not used	0	0	0	0	0	0	
3 (8)	OP_VIRTUAL_DOLBY	Virtual Dolby Effect	1	1	1	1	1	1	
2 (4)	OP_WIDE_SCREEN	16:9 sets	1	1	1	1	1	1	
1 (2)	OP_WSSB	Wide Screen Signalling Bit detection	0	0	1	0	1	0	
0 (1)	OP_ECO_SUBWOOFER	Sub woofer available	0	0	0	0	0	0	
OP3:			12	12	14	12	14	12	
7 (128)	OP_LIP_SYNC	Lip Synchronisation Circuit available	0	0	0	0	1	0	
6 (64)	OP_NOTUSED2	Not used	0	0	0	0	0	0	
5 (32)	OP_ULTRA_BASS	Ultra Bass Boost available	0	0	0	0	0	0	
4 (16)	OP_DELTA_VOLUME	Delta Volume feature available	0	0	0	0	1	0	EU only
3 (8)	OP_NOTUSED3	Not used	0	0	0	0	0	0	
2 (4)	OP_NOTUSED4	Not used	0	0	0	0	0	0	
1 (2)	OP_STEREO_DBX	Stereo DBX for NTSC available	1	0	0	0	0	1	NTSC only
0 (1)	OP_STEREO_NICAM_2CS	Stereo NICAM 2CS available	0	0	1	0	1	0	
OP4:			2	0	1	0	145	2	
7 (128)	OP_AV1	External Source 1 available	1	1	1	1	1	1	
6 (64)	OP_AV2	External Source 2 available	1	1	1	1	1	1	
5 (32)	OP_AV3	External Source 3 (Side AV) available	1	1	1	1	1	1	
4 (16)	OP_CVI	Component Video In available	1	1	1	1	0	1	Not for EU
3 (8)	OP_SVHS2	Super Video Home System 2 available	1	1	1	1	1	1	
2 (4)	OP_SVHS3	Super Video Home System 3 available	1	1	1	1	1	1	
1 (2)	OP_HOTEL_MODE	LATAM specific simplified Hotel Mode	0	0	0	0	0	0	
0 (1)	OP_NOTUSED	Not used	0	0	0	0	0	0	
OP5:			252	252	252	252	236	252	
7 (128)	OP_PERSONAL_ZAPPING	Zapping of channels feature available	0	0	0	0	0	0	
6 (64)	OP_SMART_SURF	Surf List available	1	0	0	0	0	1	
5 (32)	OP_FMTRAP	FM trap available	0	0	0	0	0	0	
4 (16)	OP_COMBFILTER	comb filter available	1	1	1	1	1	1	In Hercules
3 (8)	OP_ACTIVE_CONTROL	Auto Picture Impr. feature available	1	1	1	1	1	1	
2 (4)	OP_SMART_LOCK	Toggle Child Lock & Lock Chan. enabled	1	1	1	1	1	1	
1 (2)	OP_LIGHT_SENSOR	Light Sensor enabled	1	1	1	1	1	1	
0 (1)	OP_TWIN_TEXT	2 txt pages on screen available	0	0	1	1	1	0	
OP6:			94	30	31	31	31	94	
7 (128)	OP_TIME_WIN1	1= 5 s, 0= 2 s (Europe fixed 1.2 s)	1	1	0	1	0	1	
5, 6	not used		0	0	0	0	0	0	
4 (16)	OP_3DCOMB	3D comb filter available	0	1	0	0	0	1	NTSC only
<AP-PAL>									
3 (8)	OP_COLOR_SYSTEM_AP	1: Auto, PAL 4.43, NTSC 4.43, NTSC 3.58, SECAM 0: OFF- Auto, PAL 4.43, NTSC 4.43, NTSC 3.58	0	0	1	0	0	0	
2 (4)	OP_SOUND_SYSTEM_AP_1	000: BG 001: BG / DK 010: I / DK 011: BG / I / DK	0	1	1	1	0	0	
1 (2)	OP_SOUND_SYSTEM_AP_2	100: BG / I / DK / M	0	0	0	0	0	0	
0 (1)	OP_SOUND_SYSTEM_AP_3		0	0	0	0	0	0	
<EUROPE>									
3 (8)	OP_DUMMY6	Not used	0	0	0	0	0	0	
2 (4)	OP_DUMMY7	Not used	0	0	0	0	0	0	
1 (2)	OP_WEST_EU	West Europe Set (0 - East Europe Set) by default "on"	0	0	0	0	1	0	
0 (1)	OP_MULTI_STANDARD_EUR	For Europe multi standard set	0	0	0	0	1	0	
<LATAM>									
3 (8)	OP_DUMMY6	Not used	0	0	0	0	0	0	
2 (4)	OP_DUMMY7		0	0	0	0	0	0	
1 (2)	OP_SYSTEM_LT_1	00: NTSC-M, 01: NTSC-M, PAL-M, 10: NTSC-M, PAL-M, PAL-N, 11: NTSC-M, PAL-M, PAL-N, PAL-BG	0	0	0	0	0	0	
0 (1)	OP_SYSTEM_LT_2		0	0	0	0	0	0	
<NAFTA & AP-NTSC>									
3 (8)	OP_DUMMY6	Not used	0	0	0	0	0	0	
2 (4)	OP_DUMMY7	Not used	0	0	0	0	0	0	
1 (2)	OP_DUMMY8	Not used	0	0	0	0	0	0	
0 (1)	OP_DUMMY9	Not used	0	0	0	0	0	0	
OP7:			128	148	12	132	3	144	

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

- 9.1 Introduction
- 9.2 Block Diagram
- 9.3 Power Supply LCD
- 9.4 Input/Output
- 9.5 Tuner and IF
- 9.6 Video: TV Part (diagrams A1, A2, and A3)
- 9.7 Video: Scaler Part (diagram A7 and A13)
- 9.8 Audio Processing
- 9.9 Control
- 9.10 Abbreviation list
- 9.11 IC Data Sheets

9.1 Introduction

The LC4.6 LCD TV is a global LCD TV for the year 2004. It is the successor of the LC03 LCD TV and covers screens size 30 inch (in 15:9 ratio) and has a new styling, called Disc. This chassis has the following (new) features:

- **Audio:** The sound processor is part of the UOC processor (called "Hercules"). The chassis has a FM Radio with 40 preset channels.
- **Video:** Enhanced video features, video drivers, Active Control and multiple PIP.

The architecture consists of a TV and Scaler panel, I/O panel, Side I/O and Local Keyboard panel and Power Supply panel. The functions for video/audio processing, microprocessor (P), and CC/Teletext (TXT) decoder are all combined in one IC (TDA120xx, item 7011), the so-called third generation Ultimate One Chip (UOC-III) or "Hercules". This chip has the following features:

- Control, small signal, mono/stereo, and extensive Audio/Video switching in one IC.
- Upgrade with digital sound & video processing.
- Alignment free IF, including SECAM-L/L1 and AM.
- FM sound 4.5/5.5/6.0/6.5, no traps/bandpass filters.
- Full multi-standard colour decoder.
- One Xtal reference for all functions (microprocessor, RCP, TXT/CC, RDS, colour decoder, and stereo sound processor).

9.2 Block Diagram

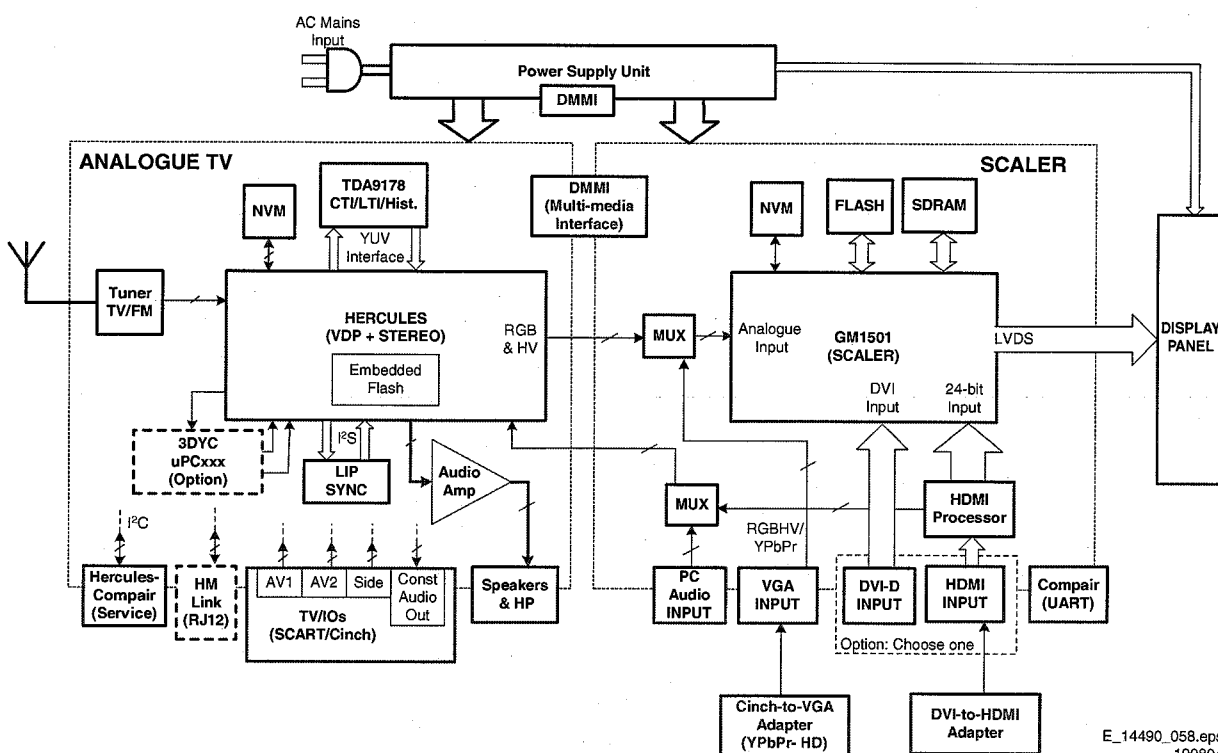


Figure 9-1 Block Diagram

The PLL tuner UR1316 (with FM radio) delivers the IF-signal, via audio & video SAW-filters, to the Video Signal Processor and FLASH embedded TEXT/Control/Graphics Micro Controller TDA120x1 (item 7011, also called Hercules). This IC has the following functions:

- Analogue Video Processing
- Sound Demodulation
- Audio Interfaces and switching
- Volume and tone control for loudspeakers
- Reflection and delay for loudspeaker channels
- Micro Controller
- Data Capture
- Display

The Hercules has one input for the internal CVBS signal and a video switch with 3 external CVBS inputs and a CVBS output. All CVBS inputs can be used as Y-input for Y/C signals. However, only 2 Y/C sources can be selected because the circuit has 2 chroma inputs. It is possible to add an additional CVBS(Y)/C input (CVBS/YX and CX) when the YUV interface and the RGB/YPRPB input are not needed. Two SCART-connectors are used: SCART1 is fully equipped and SCART2 is meant for VCR. Pin 10 of SCART2 is used for Easylink (P50) and there is a possibility for Y/C in. The CVBS-out on pin 19 can be used for WYSIWYR (What You See Is What You Record).

The video part delivers the RGB signals to the Scaler IC.

The Genesis GM1501 Malibu Scaler IC can receive two video input signals: SDTV (from Hercules), DVI (from external DVI source), or PC (from external computer).

After the video processing, the digital data is sent via a Low Voltage Differential Signalling bus to the LCD panel. LVDS is used to improve data speed and to reduce EMI significantly. There are two I²C lines and two interrupt and communication lines (TV_IRQ and TV_SC_COM) for the Scaler control. The Scaler communicates with the Hercules as a slave device. To avoid buffer overflow at the Scaler side, the TV_SC_COM line provides the necessary hardware flow control. To allow bi-directional communication, the Scaler can initiate a service interrupt-request to the Hercules via the TV_IRQ line.

The Hercules, and EEPROM are supplied with 3.3 V, which is also present during STANDBY.

The EEPROM, or NVM (Non Volatile Memory) is used to store the settings.

The sound part is built up around the Hercules. The Source Selection, Decoding and Processing are all done by the Hercules.

Power supply input are several DC voltages coming from a supply panel.

picture deforms with perfect signal; the IF-amplifier amplifies too much.

9.3 Power Supply LCD

See the FTL2.1 manual for a detailed description.

9.4 Input/Output

The I/O is divided over two parts: Rear I/O and Side I/O. The rear has two SCART inputs, a PC (VGA) input, a DVI input, and an Audio input. The side has a CVBS and Y/C (SVHS) input.

EXT1: The input of SCART1 is CVBS + RGB + L/R and the output is the video (+ sound) signal from the tuner (SC1_CVBS_RF_OUT).

EXT2: The input of SCART2 is Y/C + CVBS + L/R. The output signal is CVBS_SC2_MON_OUT (+ sound).

SCART2 is meant for VCR and has therefore some additional signals in relation to EXT1 but no RGB: it has the possibility for Y/C_in: Y_in on pin 20 and Chroma_in on pin 15.

The selection of the external I/O's is controlled by the Hercules.

PC (VGA) in: This input is directly going to the Scaler IC. See paragraph "Video: Scaler Part".

9.5 Tuner and IF

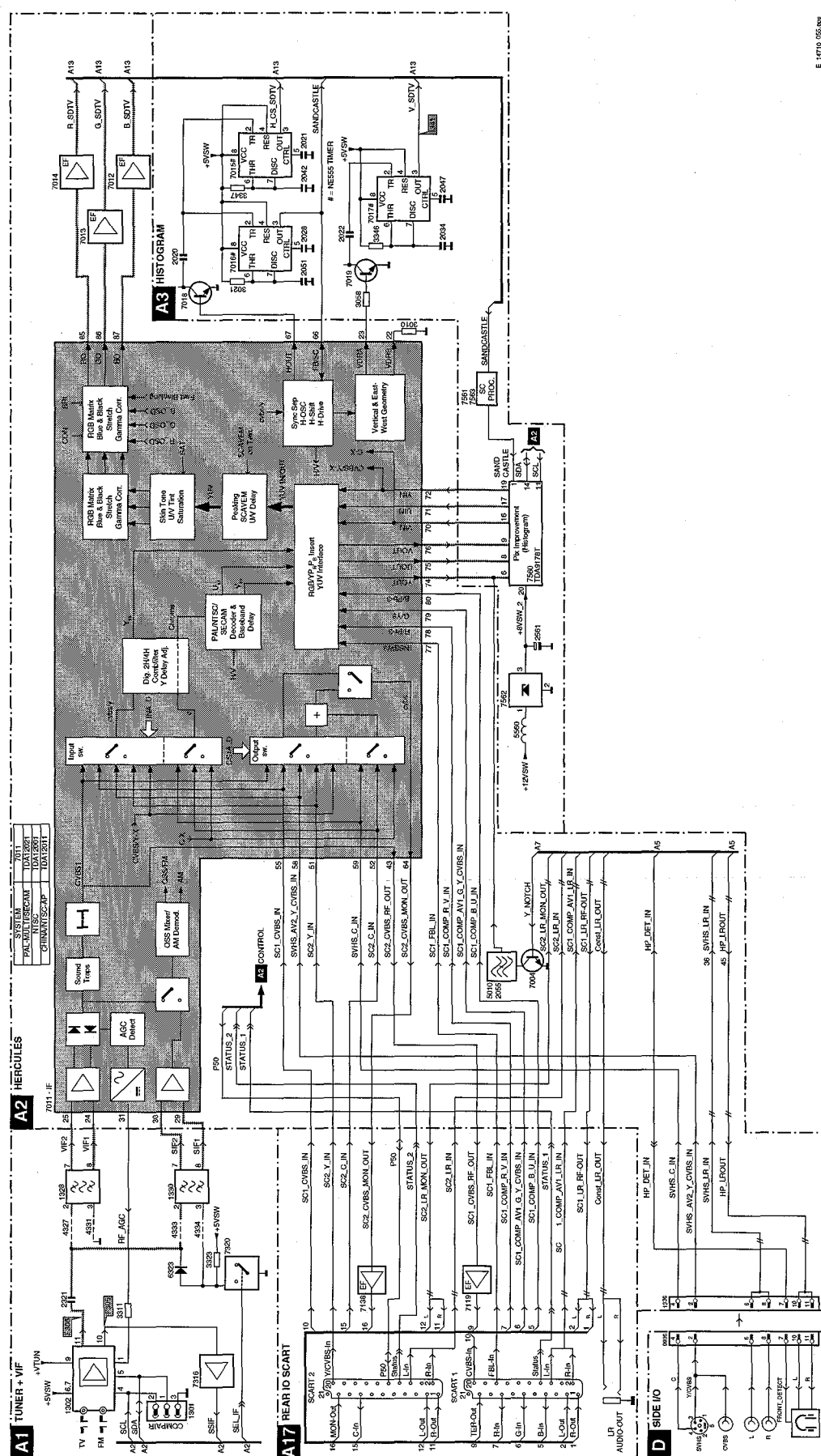
A Philips UR13xx Tuner with second input (for FM Radio) is used in the TV board. The SIF and FM signals are decoded by the Hercules. Tuning is done via I²C.

9.5.1 Video IF amplifier

The IF-filter is integrated in a SAW (Surface Acoustic Wave) filter. One for filtering IF-video (1328) and one for IF-audio (1330). The type of these filters is depending of the standard(s) that has to be received.

The output of the tuner is controlled via an IF-amplifier with AGC-control. This is a voltage feedback from pin 31 of the Hercules to pin 1 of the tuner. The AGC-detector operates on top sync and top white level. AGC take-over point is adjusted via the service alignment mode "Tuner" - "AGC". If there is too much noise in the picture, then it could be that the AGC setting is wrong. The AGC-setting could also be mis-aligned if the

9.6 Video: TV Part (diagrams A1, A2, and A3)



The video processing is completely handled by the Hercules

- IF demodulator.
- Chrominance decoder
- Sync separator.
- Horizontal & vertical drive.
- RGB processing.
- CVBS and SVHS source select.

It has also build in features like:

- CTI.
- Black stretch.
- Blue stretch.
- White stretch.
- Slow start up.
- Dynamic skin tone correction etc.

Further, it also incorporates sound IF traps and filters, and requires only one crystal for all systems.

9.6.1 Histogram (YUV picture improvement) IC

The demodulated video-signal can be checked on pins 74, 75, and 76 of IC7011 and is fed to pins 70, 71, and 72. In this path, the Histogram IC TDA9171 is inserted.

This TDA9178 can control various picture improvements:

- Histogram processing.
- Colour transient improvement.
- Luminance transient improvement.
- Black and white stretch.
- Skin tone correction.
- Green enhancement.
- Blue stretch.
- Smart peaking.
- Video dependent coring.
- Colour dependent stretching.

Since the TDA9171 is connected to the Hercules, picture improvement works only for signals that are routed trough the Hercules and not for signals directly connected to the Scaler.

9.7 Video: Scaler Part (diagram A7 and A13)

The Genesis gm1501 Scaler is a dual channel graphics and video processing IC for LCD monitors and televisions incorporating Picture in Picture, up to SXGA output resolutions. The Scaler controls the display processing in an LCD TV, e.g. like the deflection circuit in a CRT-based TV. It controls all the view modes (e.g. like "zooming" and "shifting"). Features like PC (VGA) or HD inputs, are also handled by this part.

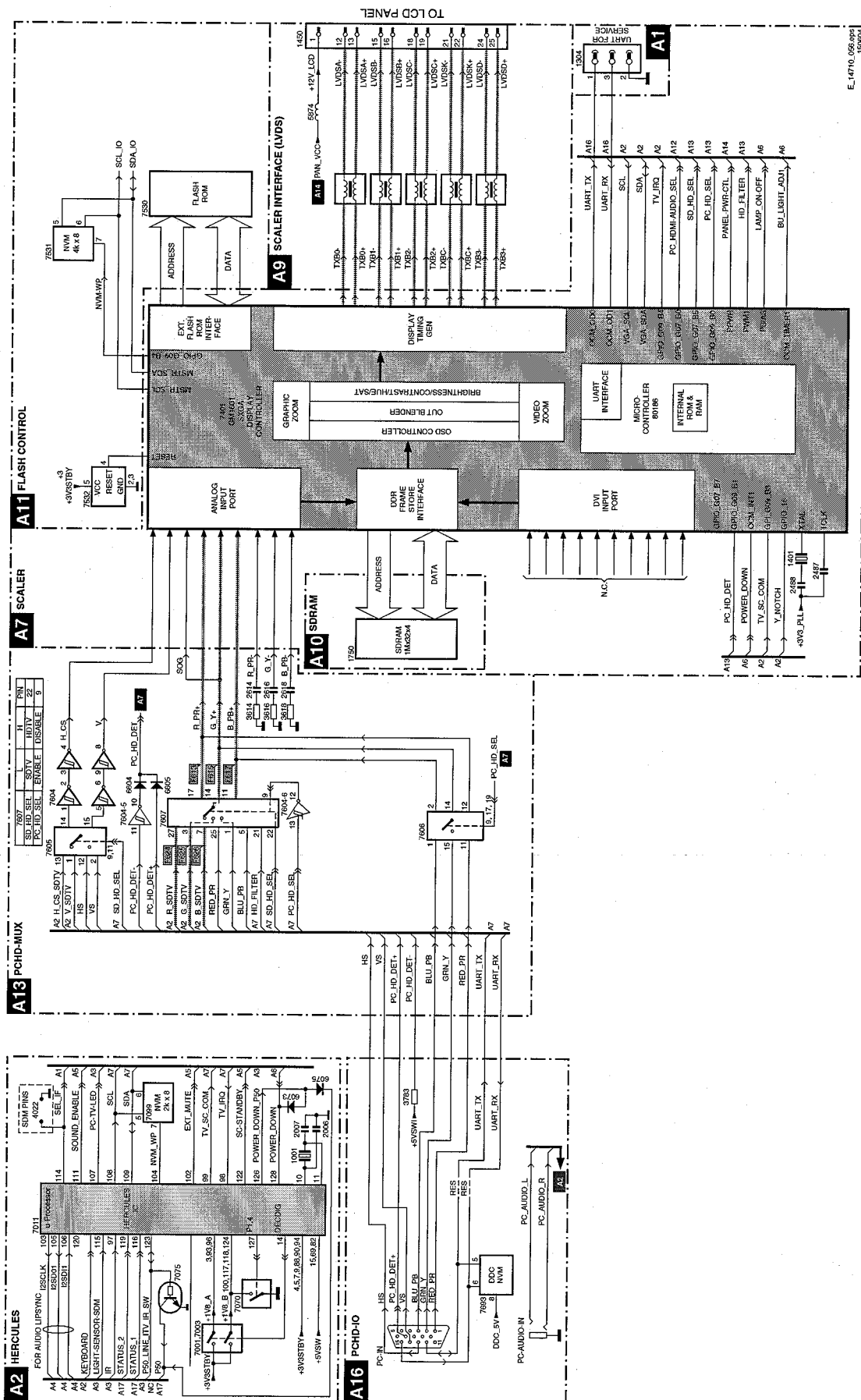


Figure 9-3 Block diagram Scaler Part

9.7.1 Features

The Scaler provides several key IC functions:

- Scaling.
- Auto-configuration/ Auto-Detection.
- Various Input Ports:
 - Analog RGB.
 - Video Graphics.
- Integrated LVDS Transmitter.
- On-chip Micro-controller

9.7.2 Inputs

Analog RGB

The RGB input is fed to pins B2, C2 and D2. This input consists of either the Hercules RGB output or the RGB/YpbPr input of the VGA connector. The Scaler can switch between the two signals via the PC_HD_SEL signal and selection IC SM5301.

PC (VGA) input

The VGA input is processed by the VGA block of the Scaler. The Scaler supports pixel frequencies up to 165MHz. YpbPr format is also supported via the VGA interface and covers a resolution of 480p/560p/720p/1080i.

9.7.3 Output

The Display Output Port provides data and control signals that permit the Scaler to connect to a variety of display devices using a TTL or LVDS interface. The output interface is configurable for single or dual wide TTL/LVDS in 18, 24 or 30-bit RGB pixels format. All display data and timing signals are synchronous with the DCLK output clock. The integrated LVDS transmitter is programmable to allow the data and control signals to be mapped into any sequence depending on the specified receiver format.

9.8 Audio Processing

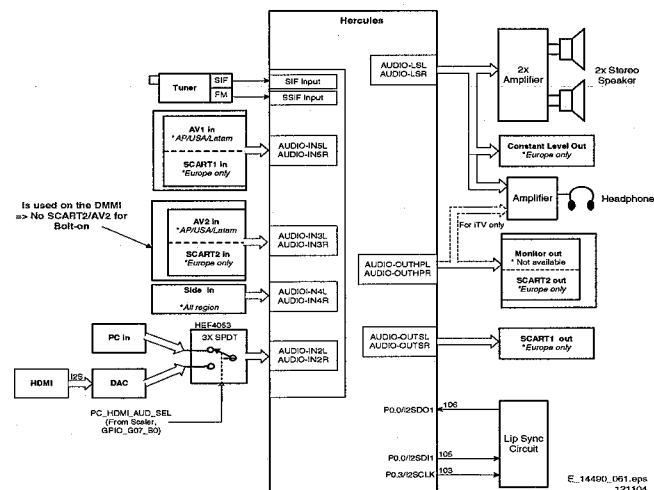


Figure 9-4 Block diagram audio processing

The audio decoding is done entirely via the Hercules. The IF output from the Tuner is fed directly to either the Video-IF or the Sound-IF input depending on the type of concept chosen. There are mainly two types of decoder in the Hercules, an analogue decoder that decodes only Mono, regardless of any standards, and a digital decoder (or DEMDEC) that can decode both Mono as well as Stereo, again regardless of any standards.

In this chassis, the analogue decoder is used in two cases:

- It is used for AM Sound demodulation in the Europe SECAM LL' transmission.
- It is used for all FM demodulation in AV-Stereo sets.

9.8.1 Diversity

The diversity for the Audio decoding can be broken up into two main concepts:

- The Quasi Split Sound concept used in Europe and some AP sets.
 - The Inter Carrier concept, used in NAFTA and LATAM.
- The UOC-III family makes no difference any more between QSS- and Intercarrier IF, nearly all types are software-switchable between the two SAW-filter constructions.

Simple data settings are required for the set to determine whether it is using the Inter Carrier or the QSS concept. These settings are done via the "QSS" and "FMI" bit found in SAM mode. Due to the diversity involved, the data for the 2 bits are being placed in the NVM location and it is required to write once during start-up.

On top of that, it can be further broken down into various systems depending on the region. The systems or region chosen, will in turn affect the type of sound standard that is/are allowed to be decoded.

- For the case of Europe, the standard consists of BG/DK/LL' for a Multi-System set. There are also versions of Eastern Europe and Western Europe set and the standard for decoding will be BG/DK and I/DK respectively. FM Radio is a feature diversity for the Europe sets. The same version can have either FM Radio or not, independent of the system (e.g. sets with BG/DK/LL' can have or not have FM radio).
- For the case of NAFTA and LATAM, there is only one transmission standard, which is the M standard. The diversity then will be based on whether it has a dBx noise reduction or a Non-dBx (no dBx noise reduction).
- For the case of AP, the standard consists of BG/DK/I/M for a Multi-System set. The diversity here will then depends on the region. AP China can have a Multi-System and I/DK version. For India, it might only be BG standard.

9.8.2 Functionality

The features available in the Hercules are as follows:

- Treble and Bass Control.
- Surround Sound Effect that includes:
 - Incredible Stereo.
 - Incredible Mono.
 - 3D Sound (not for AV Stereo).
 - TruSurround (not for AV Stereo).
 - Virtual Dolby Surround, VDS422 (not for AV Stereo).
 - Virtual Dolby Surround, VDS423 (not for AV Stereo).
 - Dolby Pro-Logic (not for AV Stereo).
- Bass Feature that includes:
 - Dynamic Ultra-Bass.
 - Dynamic Bass Enhancement.
 - BBE (not for AV Stereo).
- Auto-Volume Leveller.
- 5 Band Equalizer.
- Loudness Control.

All the features stated are available for the Full Stereo versions and limited features for the AV Stereo

9.8.3 Audio Amplifier

The audio amplifier part is very straightforward. It uses the integrated power amplifier TDA7297D, and delivers a maximum output of $2 \times 15 W_{RMS}$.

The maximum operating condition for this amplifier is 20 V

unloaded. Normal operating supply is from 6.5 V to 18 V.

Muting is done via the SOUND_ENABLE line connected to pin 13 of the amplifier-IC and coming from the Hercules.

9.8.4 Audio: Lip Sync (Optional)

A "lip sync" circuit with an audio delay can be added (not for all models/regions), in order to synchronise with video delay due to the complexity of the display processing. This video delay is significant, due to memory based processing. For instance, the "frame rate conversion" cause a delay of two frames, while the LCD panel response also cause a delay.

The circuit is a (16 bit) FIFO based digital delay. E.g.: the memory size required for a 80 ms delay (with a data clock of 1.024 MHz) can be calculated with: Memory size = delay time * f_{clk} . This gives: 80 ms * 1.024 MHz = 81920 bits.

To calculate the memory size for a 16 bits mode I2S digital audio stream we must use the following data:

- $f_s = 32$ kHz, 16 bits, stereo
- Data clock = 32 kHz * 16 * 2 = 1.024 MHz
- Memory size for 1 ms delay = 1 ms * 1.024 MHz = 1024 bits = 1 kbit

So, the delay time of 80 ms can be built with five steps of 16 ms, which is close to the frame rate. Therefore, a 128 kbit SRAM (16 x 8) is chosen.

Note that above described calculation is just an example, values in the set can deviate.

9.9 Control

9.9.1 Hercules

The System Board has two main micro-controllers on board. These are:

- On-chip x86 micro-controller (OCM) from Genesis LCD TV/Monitor Controller.
- On-chip 80C51 micro-controller from Philips Semiconductor UOCIII (Hercules) series.

Each micro-controller has its own I²C bus which host its own internal devices.

The Hercules is integrated with the Video and Audio Processor. For dynamic data storage, such as SMART PICTURE and SMART SOUND settings, an external NVM IC is being used. Another feature includes an optional Teletext/Closed Caption decoder with the possibility of different page storage depending on the Hercules type number.

The Micro Controller ranges in ROM from 128 kB with no TXT-decoder to 128 kB with a 10 page Teletext or with Closed Caption.

9.9.2 Block Diagram

The block diagram of the Micro Controller application is shown below.

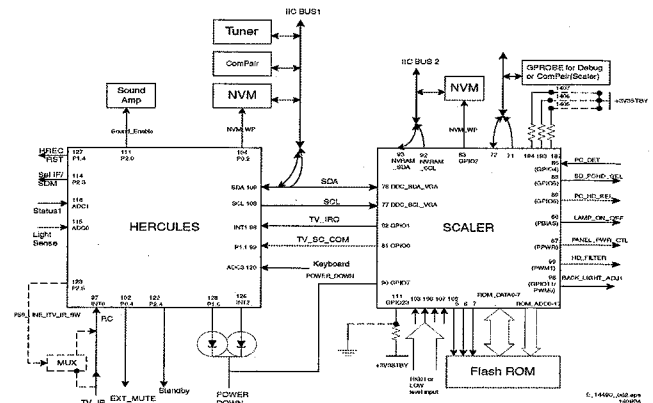


Figure 9-5 Micro Controller block diagram

9.9.3 Basic Specification

The Micro Controller operates at the following supply voltages:

- +3.3 V_{DC} at pins 4, 88, 94, and 109.
- +1.8 V_{DC} at pins 93, 96, and 117.
- I²C pull up supply: +3.3V_{DC}.

9.9.4 Pin Configuration and Functionality

The ports of the Micro Controller can be configured as follows:

- A normal input port.
- An input ADC port.
- An output Open Drain port.
- An output Push-Pull port.
- An output PWM port.
- Input/Output Port

The following table shows the ports used for the L04 control:

Table 9-1 Micro Controller ports overview

Pin	Name	Description	Configuration
97	INT0/ P0.5	IR	INT0
98	P1.0/ INT1	TV_IRQ	INT2
99	P1.1/ T0	TV_SC_COM	P1.1
102	P0.4/ I ² SWS	EXT_MUTE	P0.4
103	P0.3/ I ² SCLK	Lip Sync	I ² SCLK
104	P0.2/ I ² SDO2	NVM_WP	P0.2
105	P0.1/ I ² SDO1	Lip Sync	I ² SDO1
106	P0.0/ I ² SDI/O	Lip Sync	I ² SDI/O
107	P1.3/ T1	PC-TV_LED	P1.3
108	P1.6/ SCL	SCL	SCL
109	P1.7/ SDA	SDA	SDA
111	P2.0/ TPWM	SOUND_ENABLE	P2.0
112	P2.1/ PWM0	(for future use)	-
113	P2.2/ PWM1	(for future use)	-
114	P2.3/ PWM2	SEL_IF	P2.3
115	P3.0/ ADC0	Light Sensor - SDM	ADC0
116	P3.1/ ADC1	STATUS_1	ADC1
119	P3.2/ ADC2	STATUS_2	ADC2
120	P3.3/ ADC3	KEYBOARD	ADC3
122	P2.4/ PWM3	STANDBY	P2.4
123	P2.5/ PWM4	(for future use)	-
126	P1.2/ INT2	(for future use)	-
127	P1.4/ RX	HERC_RESET	-
128	P1.5/ TX	POWER_DOWN	P1.5

The description of each functional pin is explained below:

- **LED.** This signal is used as an indication for the Stand-by, Remote and Error Indicator. Region diversity:
 - During protection mode, the LED blinks and the set is in stand-by mode.
 - During error conditions it blinks at a predefined rate.
 - After receiving a valid RC-5 or local keyboard command it flashes once.
 - For sets with error message indication, the LED blinks when message is active and the set is in stand-by mode.
- **SCL.** This is the clock wire of the two-wire single master bi-directional I²C bus.
- **SDA.** This is the data wire of the two-wire single master bi-directional I²C bus.
- **STANDBY.** The Hercules generates this signal. This can enable the power supply in normal operation and disable it during Stand-by. It is of logic "high" (3.3 V) under normal operation and "low" (0 V) during Stand-by.
- **IR.** This input pin is connected to an RC5 remote control receiver.
- **SEL-IF.** This is an output pin to switch the Video SAW filter between M system and other systems.
 - 0: NTSC M (default)
 - 1: PAL B/G, DK, I, L
- **NVM_WP.** The global protection line is used to enable and disable write protection to the NVM. When write to the NVM is required, pin 7 of the NVM must be pulled to logic '0' first (via Write_Protect of the micro-controller pin) before a write is performed. Otherwise pin 7 of NVM must always be at logic "1"
 - 0: Disabled
 - 1: Enabled (default)
- **SOUND_ENABLE.** This pin is use to MUTE the audio amplifier. It is configured as push pull.
- **STATUS_1.** This signal is used to read the status of the SCART 1 input.
- **STATUS_2.** This signal is used to read the status of the SCART 2 input.
- **HERC_RESET.** This pin is use to switch the +1.8V supply.
- **POWER_DOWN.** The power supply generates this signal. Logic "high" (3.3 V) under normal operation of the TV and goes "low" (0 V) when the Mains input voltage supply goes below 70 V_{AC}.
- **Keyboard.** Following are the Keyboard functions and the step values (8 bit) for it.

Table 9-2 Local keyboard values

Function	Voltage (V _{DC})	Step values (8 bit)
NAFTA Stand-by	0	0 - 6
Ch +	0.43	7 - 33
Exit Factory (Ch- and Vol-)	0.69	34 - 53
Ch -	0.93	54 - 73
Menu (Vol - and Vol +)	1.19	74 - 96
Vol -	1.49	97 - 121
DVD Eject	1.8	122 - 147
Vol +	2.12	148 - 169

- **TV_IRQ.** This signal is the interrupt from the Scaler IC.
- **TV_SC_COM.** This signal is used for the communication with the Scaler IC.
- **EXT_MUTE.** This signal is used to reduce the Switch-off plop.

9.10 Abbreviation list

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
1080i	1080 visible lines, interlaced
1080p	1080 visible lines, progressive scan
2CS	2 Carrier Stereo
480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASD	Automatic Standard Detection
AV	Audio Video
B-SC1-IN	Blue SCART1 in
B-SC2-IN	Blue SCART2 in
B-TXT	Blue teletext
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BOCMA	Bimos one Chip Mid-end Architecture: video and chroma decoder
C-FRONT	Chrominance front input
CBA	Circuit Board Assembly (or PWB)
CL	Constant Level: audio output to connect with an external amplifier
CLUT	Colour Look Up Table
ComPair	Computer aided rePair
CSM	Customer Service Mode
CVBS	Composite Video Blanking and Synchronisation
CVBS-EXT	CVBS signal from external source (VCR, VCD, etc.)
CVBS-INT	CVBS signal from Tuner
CVBS-MON	CVBS monitor signal
CVBS-TER-OUT	CVBS terrestrial out
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DFU	Directions For Use: owner's manual
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DST	Dealer Service Tool: special (European) remote control designed for service technicians
DTS	Digital Theatre Sound
DVD	Digital Video Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EPG	Electronic Program Guide: system used by broadcasters to transmit TV guide information (= NexTVView)
EU	EUrope
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FBL-SC1-IN	Fast blanking signal for SCART1 in
FBL-SC2-IN	Fast blanking signal for SCART2 in
FBL-TXT	Fast Blanking Teletext
FLASH	FLASH memory

FM	Field Memory / Frequency Modulation		South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
FMR	FM Radio		
FRC	Frame Rate Converter		
FRONT-C	Front input chrominance (SVHS)	PC	Personal Computer
FRONT-DETECT	Front input detection	PCB	Printed Circuit Board (or PWB)
FRONT-Y_CVBS	Front input luminance or CVBS (SVHS)	PIG	Picture In Graphic
		PIP	Picture In Picture
G-SC1-IN	Green SCART1 in	PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
G-SC2-IN	Green SCART2 in		
G-TXT	Green teletext		
H	H_sync to the module		
HA	Horizontal Acquisition: horizontal sync pulse coming out of the BOCMA	Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
HD	High Definition		
HP	Head Phone		
I	Monochrome TV system. Sound carrier distance is 6.0 MHz	PWB	Printed Wiring Board (or PCB)
I ² C	Integrated IC bus	RAM	Random Access Memory
I ² S	Integrated IC Sound bus	RC	Remote Control transmitter
IC	Integrated Circuit	RC5	Remote Control system 5, the signal from the remote control receiver
IF	Intermediate Frequency	RGB	Red, Green, and Blue. The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced.
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.	RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
IR	Infra Red	ROM	Read Only Memory
IRQ	Interrupt ReQuest	SAM	Service Alignment Mode
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customers wishes	SIF	Sound Intermediate Frequency
		SC	SandCastle: two-level pulse derived from sync signals
LATAM	LATin America	SC1-OUT	SCART output of the MSP audio IC
LC04	Philips chassis name for LCD TV 2004 project	SC2-B-IN	SCART2 Blue in
		SC2-C-IN	SCART2 chrominance in
LCD	Liquid Crystal Display	SC2-OUT	SCART output of the MSP audio IC
LED	Light Emitting Diode	S/C	Short Circuit
LINE-DRIVE	Line drive signal	SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	SCL	CLock Signal on I ² C bus
		SD	Standard Definition
LS	Loud Speaker	SDA	DAta Signal on I ² C bus
LVDS	Low Voltage Differential Signalling, data transmission system for high speed and low EMI communication.	SDRAM	Synchronous DRAM
		SECAM	SEquence Couleur Avec Memoire. Colour system used mainly in France and Eastern Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz	SIF	Sound Intermediate Frequency
MOSFET	Metal Oxide Semiconductor Field Effect Transistor	SMPS	Switch Mode Power Supply
		SND	SouND
MPEG	Motion Pictures Experts Group	SNDL-SC1-IN	Sound left SCART1 in
MSP	Multi-standard Sound Processor: ITT sound decoder	SNDL-SC1-OUT	Sound left SCART1 out
		SNDL-SC2-IN	Sound left SCART2 in
MUTE	MUTE Line	SNDL-SC2-OUT	Sound left SCART2 out
NC	Not Connected	SNDR-SC1-IN	Sound right SCART1 in
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, used mainly in Europe.	SNDR-SC1-OUT	Sound right SCART1 out
		SNDR-SC2-IN	Sound right SCART2 in
		SNDR-SC2-OUT	Sound right SCART2 out
NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)	SNDS-VL-OUT	Surround sound left variable level out
		SNDS-VR-OUT	Surround sound right variable level out
		SOPS	Self Oscillating Power Supply
		S/PDIF	Sony Philips Digital InterFace
		SRAM	Static RAM
		STBY	Stand-by
		SVHS	Super Video Home System
NVM	Non Volatile Memory: IC containing TV related data (for example, options)	SW	Sub Woofer / SoftWare
		THD	Total Harmonic Distortion
O/C	Open Circuit	TXT	TeleteXT
ON/OFF LED	On/Off control signal for the LED	uP	Microprocessor
OSD	On Screen Display	VA	Vertical Acquisition
P50	Project 50 communication: protocol between TV and peripherals	VL	Variable Level out: processed audio output toward external amplifier
		VCR	Video Cassette Recorder
PAL	Phase Alternating Line. Colour system used mainly in Western Europe (colour carrier = 4.433619 MHz) and	VGA	Video Graphics Array
		WD	Watch Dog

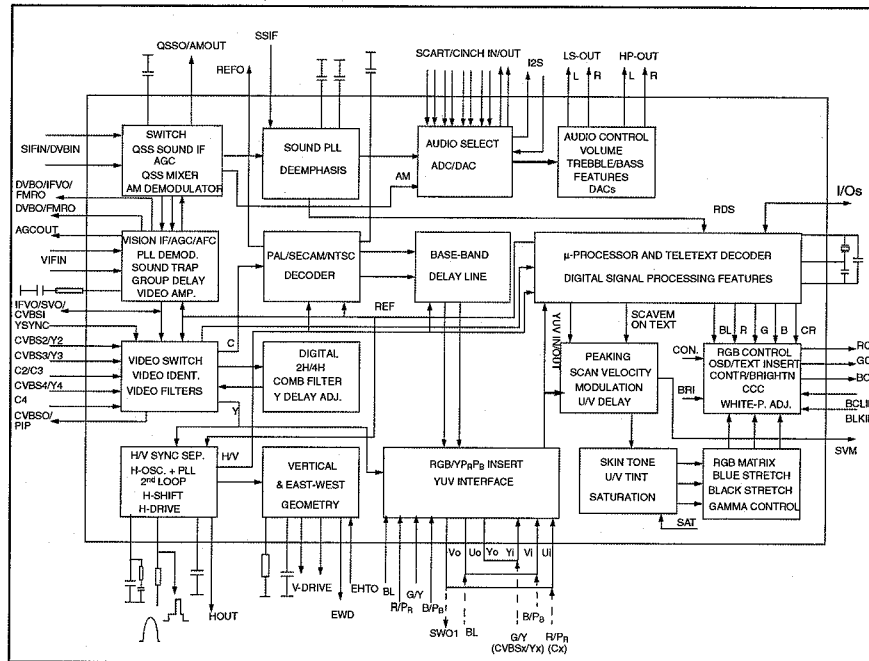
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
YPbPr	Component video (Y= Luminance, Pb/ Pr= Colour difference signals)
Y/C	Luminance (Y) and Chrominance (C) signal
Y-OUT	Luminance-signal
YUV	Component video

9.11 IC Data Sheets

This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.11.1 Diagram A2, Type TDA12029H (IC7011)

Block diagram of the "AV-stereo" TV processor with audio DSP



Pin configuration "stereo" and "AV-stereo" versions with Audio DSP

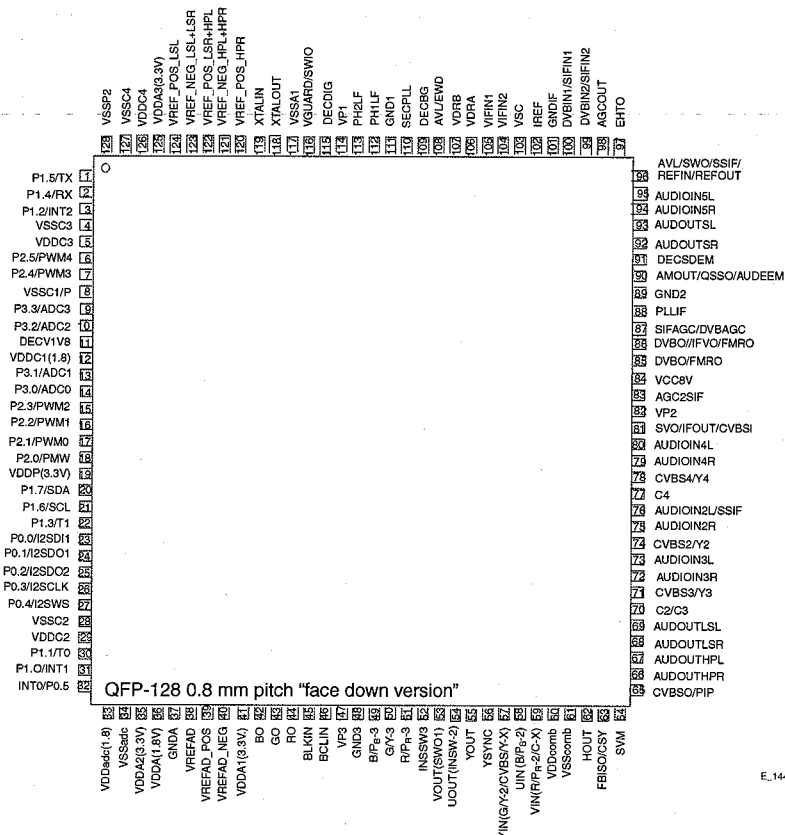
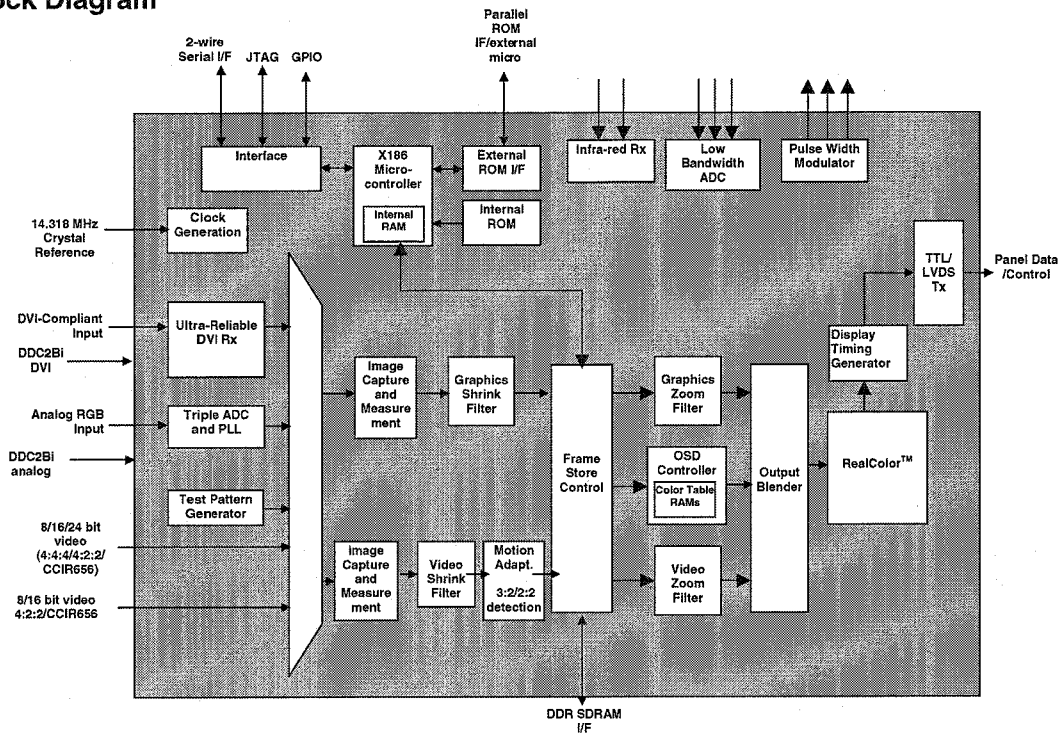


Figure 9-6 Internal Block Diagram and Pin Configuration

9.11.2 Diagram A7, Type GM1501 (IC7401)

Block Diagram



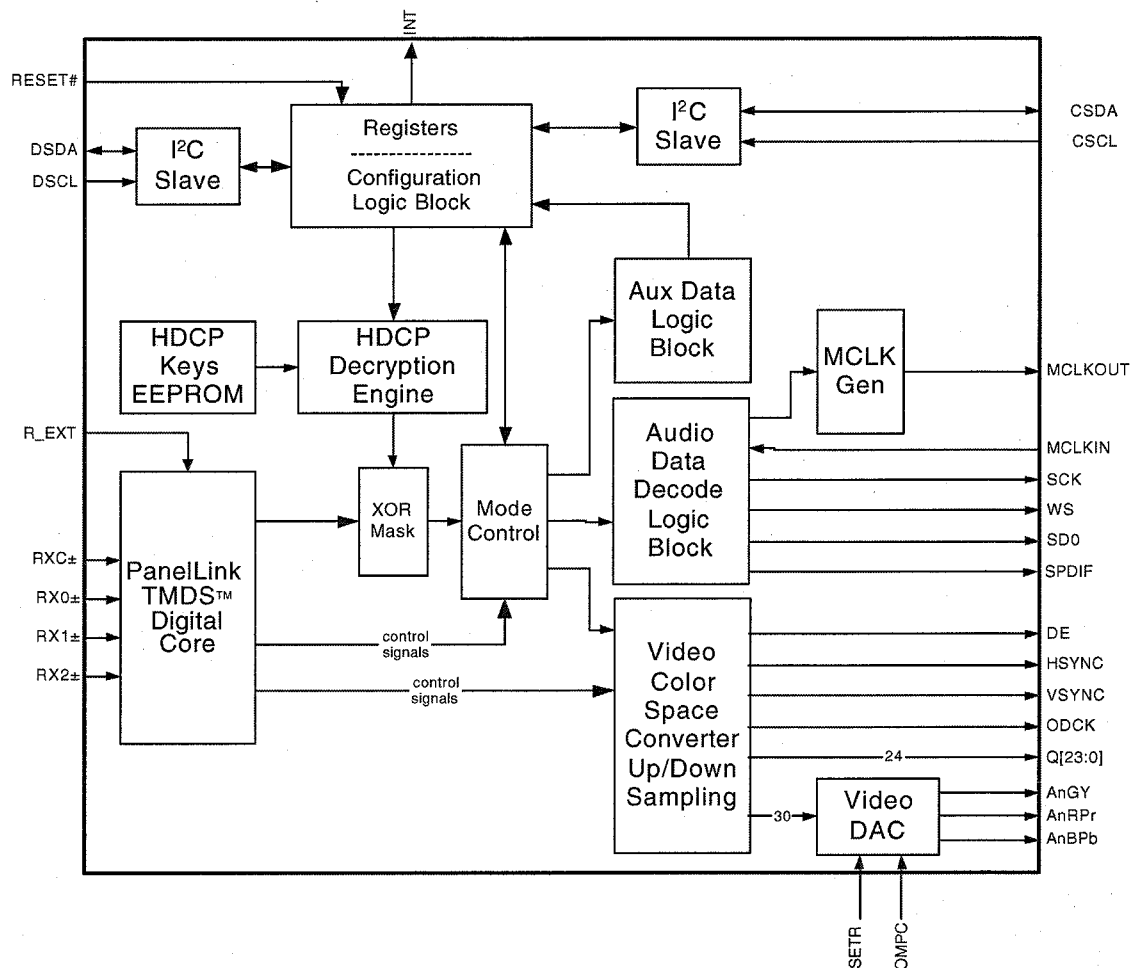
Pin Configuration

A	NC	ADC_3.3	ADC_1.8	ADC_1.8	ADC_1.8	RXC+	DVI_GND	RX0+	RX1+	RX2+	DVI_GND	LBADC_N3	D_GND
B	BLUE-	BLUE+	ADC_3.3	ADC_1.8	DVI_GND	RXC-	DVI_GND	RX0-	RX1-	RX2-	REXT	LBADC_N2	D_GND
C	GREEN-	GREEN+	SGQ	ADC_1.8	NC	DVI_3.3	DVI_GND	DVI_3.3	DVI_3.3	DVI_3.3	DVI_3.3	LBADC_N1	LBADC_N0
D	RED-	RED+	ADC_3.3	ADC_1.8	NC	DVI_1.8	DVI_GND	DVI_1.8	DVI_1.8	DVI_1.8	DVI_GND	LBADC_RETURN	LBADC_GND
E	ADC_AGN	ADC_R0P	ADC_3.3	ADC_1.8	ADC_1.8								
F	NC	VDD33_PLL	VSSA33_RPLL	VDDA33_RPLL									
G	VDDA33_FPLL	VSSD33_FPLL	TCLK	XTAL									
H	VDD33_SDDS	VSSA33_SDDS	VDDA33_SDDS	VSSA33_FPLL									
J	VDD33_DD3S	VSSA33_DD3S	VDDA33_DD3S	VSSD33_SDDS									
K	RESETn	ACS_RSET_HD	NC	VSSD33_DD3S						CORE_1.8	CORE_1.8	D_GND	D_GND
L	OCM_INT2	OCM_INT1	AVSYNC	AHSYNC						D_GND	CORE_1.8	D_GND	D_GND
M	OCM_UD0	OCM_UD1	IR0	IR1						D_GND	D_GND	D_GND	D_GND
N	VGA_SDA	VGA_SCL	DVI_SDA	DVI_SCL						D_GND	D_GND	D_GND	D_GND
P	OCM_CS1n	OCM_CS2n	MSTR_SDA	MSTR_SCL						D_GND	D_GND	D_GND	D_GND
R	ROM_CSn	OCM_REn	OCM_WEn	EXTCLK						D_GND	D_GND	D_GND	D_GND
T	OCMADDR17	OCMADDR18	OCMADDR19	OCM_CS0n						D_GND	CORE_1.8	D_GND	D_GND
U	OCMADDR13	OCMADDR14	OCMADDR15	OCMADDR16						CORE_1.8	CORE_1.8	D_GND	D_GND
V	OCMADDR9	OCMADDR10	OCMADDR11	OCMADDR12									
W	OCMADDR6	OCMADDR7	OCMADDR8	D_3.3									
Y	OCMADDR3	OCMADDR4	OCMADDR5	D_3.3									
AA	OCMADDR0	OCMADDR1	OCMADDR2	D_4.5									
AB	OCMDATA19	OCMDATA14	OCMDATA15	D_3.3									
AC	OCMDATA10	OCMDATA11	OCMDATA12	D_3.3	GPIO_G08_B2 (DEGRN0)	D_3.3	DCLK	D_3.3	GPIO_G07_B2 (DERED4)		SHIELD[1] (DEGRN3)	GPIO_G08_B2 (DEGRN0)	D_3.3
AD	OCMDATA9	OCMDATA6	OCMDATA3	OCMDATA0	GPIO_G08_B5 (DEGRN1)	GPIO_G08_B6 (DORED0)	DEN	GPIO_G08_B5 (DOBLU1)	GPIO_G07_B3 (DERED5)	GPIO_G07_B4 (DERED6)	SHIELD[2] (DEGRN4)	GPIO_G08_B5 (DORED0)	D_3.3
AE	OCMDATA8	OCMDATA5	OCMDATA2	GPIO_G08_B0 (DERED3)	GPIO_G08_B4 (DEBLU0)	GPIO_G08_B1 (DORED1)	GPIO_G08_B3 (DOGRN1)	GPIO_G07_B0 (DERED2)	GPIO_G07_B4 (DERED6)	GPIO_G07_B7 (DERED9)	SHIELD[3] (DEGRN5)	BC+ (DEGRN8)	SHIELD[4] (DEBLU2)
AF	OCMDATA7	OCMDATA4	OCMDATA1	GPIO_G08_B1 (DERED1)	GPIO_G08_B5 (DEBLU0)	GPIO_G08_B2 (DOGRN0)	GPIO_G08_B4 (DOBLU0)	GPIO_G07_B1 (DERED3)	GPIO_G07_B5 (DERED7)	SHIELD[0] (DEGRN2)	B3+ (DEGRN6)	B3- (DEGRN7)	BC- (DEGRN9)
	1	2	3	4	5	6	7	8	9	10	11	12	13

E_14490_099.eps
241204

Figure 9-7 Internal Block Diagram and Pin Configuration

BLOCK DIAGRAM



PIN CONFIGURATION

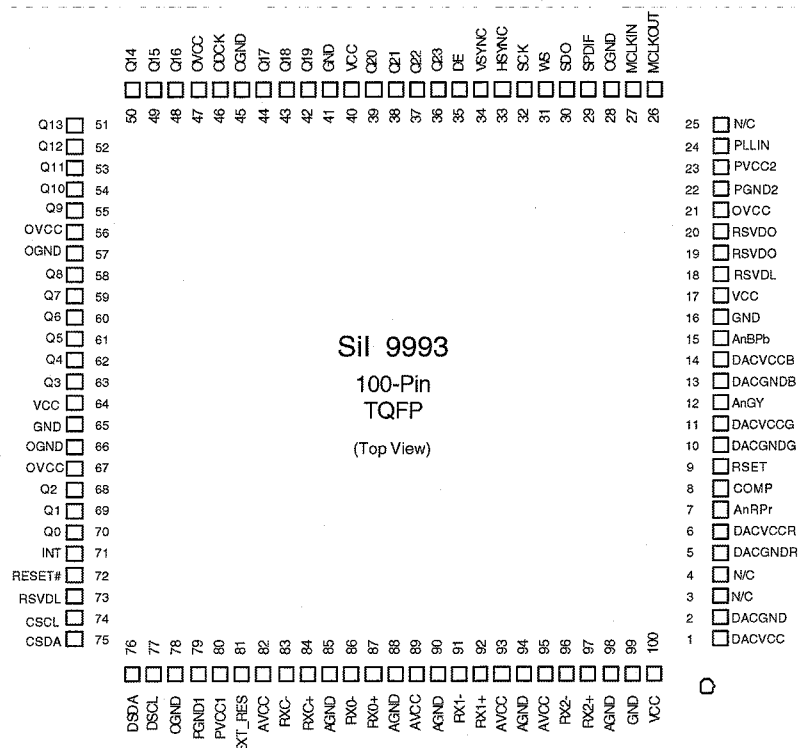


Figure 9-8 Internal Block Diagram

10. Spare Parts List

Set Level

Various

1004▲	9322 199 94682	LCD LC300W01A5 (LPL)
1004▲	9322 206 53682	LCD LC300W01C5 (LPL)
1004▲	9322 213 33682	LCD T296XW01V3(AUO)
1116	3104 328 26371	Side I/O assy LCD
8302	3104 311 04731	Cable 7p/560/7p
8303	3104 311 06511	Cable 10p/280/10p
8304	3104 311 08271	Cable 4p/340/4p
8305	3104 311 08411	Cable 3P/340/3P
8306	3104 311 01431	Cable 2P3/340/2P3
8307	3104 311 08371	Cable 4p/340/4p
8309	3104 311 08301	Cable 3p/340/3p
8312	3104 311 06361	Cable 15p/340/16p (LPL)
8313	3104 311 08791	Cable 15p/120/16p (LPL)
8315	3104 311 06511	Cble 10p/280/10p (AUO)
8317	3104 311 03611	Cble 12p/280/12p (AUO)
8346	3104 311 07001	Cable 11p/400/11p
8350	3104 311 08611	Cable 31p/120/20p DF19
8352	3104 311 06811	Cable 9p340/9p

Small Signal Board [A]

Various

0601	3104 317 07831	SW (check Prod. Survey)
1001	2422 543 01414	Crystal 24M576
1101	2422 025 18133	Socket 21p f
1102	2422 025 18133	Socket 21p f
1105	2422 026 05462	Socket CHINCH 4p f
1301	2422 025 16835	Connector 3p m
1302▲	3139 147 19801	Tuner U+V PLL BGHIL
1328	2422 549 44372	SAW 38.9MHz K3953L
1330	2422 549 44369	SAW 38.9MHz K9656L
1336	2422 025 10655	Connector 11p m
1401	2422 543 01133	Xtal 14.32MHz 20pF
1402	2422 025 10768	Connector 3p m
1450	2422 025 18427	Connector 31p f
1681	2422 025 16835	Connector 3p m
1687	2438 031 00416	Connector 15p f
1752	2422 025 10769	Connector 9p m
1860	2422 549 45325	Bead 67Ω at 100MHz
1861	2422 549 45325	Bead 67Ω at 100MHz
1862	2422 549 45325	Bead 67Ω at 100MHz
1863	2422 549 45325	Bead 67Ω at 100MHz
1864	2422 549 45325	Bead 67Ω at 100MHz
8308	3104 311 07691	Cable 2P3/280/INLET

—II—

2000	2022 552 05682	2.2μF 10% 6.3V
2001	2020 552 96718	220nF 10% 6.3V 0402
2002	4822 124 23002	10μF 16V
2003	2238 869 15109	10pF 5% 50V 0402
2004	2020 552 96718	220nF 10% 6.3V 0402
2005	3198 035 71040	100nF 10% 16V 0402
2006	3198 034 06880	6.8pF 1% 50V 0402
2007	3198 034 06880	6.8pF 1% 50V 0402
2008	3198 017 44740	470nF 10V 0603
2009	3198 017 41050	1μF 10V 0603
2010	3198 035 26820	6.8nF 10% 16V 0402
2011	2020 552 96718	220nF 10% 6.3V 0402
2012	4822 124 12095	100μF 20% 16V
2013	3198 035 71040	100nF 10% 16V 0402
2014	3198 035 71040	100nF 10% 16V 0402
2015	3198 035 71040	100nF 10% 16V 0402
2016	3198 035 71040	100nF 10% 16V 0402
2017	3198 035 71040	100nF 10% 16V 0402
2018	3198 035 71040	100nF 10% 16V 0402
2019	4822 124 80151	47μF 16V
2020	2238 869 15101	100pF 5% 50V 0402
2021	2020 552 96628	10nF 10% 16V 0402
2022	3198 035 02210	220pF 5% 50V 0402
2023	3198 035 71040	100nF 10% 16V 0402
2024	4822 124 12095	100μF 20% 16V
2025	3198 035 71040	100nF 10% 16V 0402
2026	3198 035 71040	100nF 10% 16V 0402
2027	3198 035 71040	100nF 10% 16V 0402
2028	2020 552 96628	10nF 10% 16V 0402
2029	3198 035 71040	100nF 10% 16V 0402
2030	3198 035 71040	100nF 10% 16V 0402
2031	3198 035 71040	100nF 10% 16V 0402
2032	3198 035 71040	100nF 10% 16V 0402
2033	2020 552 96718	220nF 10% 6.3V 0402

2034	2020 552 00002	3.3nF 2% 50V 0805
2035	2020 552 96656	10μF 20% 25V 1210
2036	2020 552 96807	1μF 10% 10V 0603
2037	2020 552 96807	1μF 10% 10V 0603
2040	4822 124 23002	10μF 16V
2041	2020 552 96718	220nF 10% 6.3V 0402
2042	2020 552 00002	3.3nF 2% 50V 0805
2043	3198 035 71040	100nF 10% 16V 0402
2044	2020 552 96718	220nF 10% 6.3V 0402
2045	2238 869 15109	10pF 5% 50V 0402
2046	2238 869 15109	10pF 5% 50V 0402
2047	2020 552 96628	10nF 10% 16V 0402
2048	2238 869 15109	10pF 5% 50V 0402
2049	2238 869 15109	10pF 5% 50V 0402
2050	2238 869 15109	10pF 5% 50V 0402
2051	2020 552 00002	3.3nF 2% 50V 0805
2053	2020 552 96618	1nF 10% 50V 0402
2054	2020 552 96632	22nF 10% 16V 0402
2055	4822 126 14519	22pF 5% 50V 0402
2056	3198 035 71040	100nF 10% 16V 0402
2057	2238 869 15109	10pF 5% 50V 0402
2058	2238 869 15109	10pF 5% 50V 0402
2059	2238 869 15109	10pF 5% 50V 0402
2060	3198 035 71040	100nF 10% 16V 0402
2061	4822 124 23002	10μF 16V
2062	2238 869 15109	10pF 5% 50V 0402
2063	3198 017 31540	150nF 10V 0603
2064	3198 017 41050	1μF 10V 0603
2067	2238 869 15109	10pF 5% 50V 0402
2068	2020 552 96718	220nF 10% 6.3V 0402
2069	2238 869 15109	10pF 5% 50V 0402
2070	2020 552 96834	1μF 20% 6.3V 0402
2071	4822 124 12095	100μF 20% 16V
2072	4822 126 14076	220nF +80/-20% 25V
2073	2020 552 96618	1nF 10% 50V 0402
2074	2020 552 96718	220nF 10% 6.3V 0402
2076	2020 552 96718	220nF 10% 6.3V 0402
2077	2020 552 96834	1μF 20% 6.3V 0402
2078	2238 869 15101	100pF 5% 50V 0402
2079	2238 869 15109	10pF 5% 50V 0402
2080	2238 869 15109	10pF 5% 50V 0402
2081	2238 869 15109	10pF 5% 50V 0402
2082	2020 552 96618	1nF 10% 50V 0402
2084	2020 552 96718	220nF 10% 6.3V 0402
2085	2020 552 96618	1nF 10% 50V 0402
2086	2020 552 96618	1nF 10% 50V 0402
2087	2238 869 15109	10pF 5% 50V 0402
2088	2238 869 15109	10pF 5% 50V 0402
2089	2020 552 96618	1nF 10% 50V 0402
2090	2238 869 15109	10pF 5% 50V 0402
2091	2238 869 15109	10pF 5% 50V 0402
2092	2238 869 15109	10pF 5% 50V 0402
2093	2238 869 15109	10pF 5% 50V 0402
2094	2238 869 15109	10pF 5% 50V 0402
2095	2238 869 15109	10pF 5% 50V 0402
2096	2238 869 15109	10pF 5% 50V 0402
2097	2238 869 15109	10pF 5% 50V 0402
2098	2238 869 15109	10pF 5% 50V 0402
2099	2020 552 96618	1nF 10% 50V 0402
2101	4822 126 14241	330pF 0603 50V
2103	4822 126 14241	330pF 0603 50V
2104	2020 552 96807	1μF 10% 10V 0603
2105	4822 126 14241	330pF 0603 50V
2107	4822 126 14241	330pF 0603 50V
2108	2020 552 96807	1μF 10% 10V 0603
2109	4822 126 13881	470pF 5% 50V
2110	4822 126 13881	470pF 5% 50V
2111	4822 126 13881	470pF 5% 50V
2112	4822 126 13881	470pF 5% 50V
2127	4822 126 14241	330pF 0603 50V
2128	2020 552 96807	1μF 10% 10V 0603
2129	4822 126 14241	330pF 0603 50V
2131	4822 126 14241	330pF 0603 50V
2132	2020 552 96807	1μF 10% 10V 0603
2133	4822 126 14241	330pF 0603 50V
2134	4822 126 13881	470pF 5% 50V
2135	4822 126 13881	470pF 5% 50V
2136	4822 126 13881	470pF 5% 50V
2137	4822 126 13881	470pF 5% 50V
2138	3198 017 41050	1μF 10V 0603
2152	4822 126 14241	330pF 0603 50V
2155	4822 126 14241	330pF 0603 50V
2169	4822 124 23002	10μF 16V
2251	2238 869 15109	10pF 5% 50V 0402
2252	2238 869 15109	10pF 5% 50V 0402
2253	4822 124 23002	10μF 16V
2254	4822 124 23002	10μF 16V
2262	4822 124 80151	47μF 16V
2263	2020 552 96656	10μF 20% 25V 1210

2264	2020 552 96656	10μF 20% 25V 1210
2265	3198 035 02210	220pF 5% 50V 0402
2266	2020 552 96632	22nF 10% 16V 0402
2268	2020 012 93795	470μF 20% 16V
2269	2020 012 93795	470μF 20% 16V
2271	2020 552 96628	10nF 10% 16V 0402
2302	4822 122 33761	22pF 5% 50V
2303	4822 122 33761	22pF 5% 50V
2307	3198 024 44730	47nF 50V 0603
2308	3198 030 82280	2.2μF 20% 50V
2309	2020 021 91871	470μF 20% 16V
2311	4822 124 12095	100μF 20% 16V
2321	5322 126 11583	10nF 10% 50V 0603
2324	5322 126 11583	10nF 10% 50V 0603
2355	3198 030 82280	2.2μF 20% 50V
2356	3198 030 82280	2.2μF 20% 50V
2357	3198 035 71040	100nF 10% 16V 0402
2358	2020 552 96625	3.3nF 10% 50V 0402
2359	2020 552 96628	10nF 10% 16V 0402
2370	2020 552 96834	1μF 20% 6.3V 0402
2371	2020 552 96834	1μF 20% 6.3V 0402
2372	2020 552 96618	1nF 10% 50V 0402
2373	2020 552 96618	1nF 10% 50V 0402
2374	3198 035 71040	100nF 10% 16V 0402
2375	4822 124 12082	10μF 20% 50V
2376	3198 017 41050	1μF 10V 0603
2377	3198 017 41050	1μF 10V 0603
2378	2020 552 96718	220nF 10% 6.3V 0402
2380	4822 124 12095	100μF 20% 16V
2381	3198 035 71040	100nF 10% 16V 0402
2382	2020 021 91871	470μF 20% 16V
2386	3198 017 41050	1μF 10V 0603
2387	4822 126 14324	33pF 5% 50V 0402
2388	4822 126 14324	33pF 5% 50V 0402
2392	3198 017 41050	1μF 10V 0603
2394	3198 035 71040	100nF 10% 16V 0402
2395	3198 035 71040	100nF 10% 16V 0402
2396	4822 124 23002	10μF 16V
2397	2020 552 96834	1μF 20% 6.3V 0402
2398	2020 552 96834	1μF 20% 6.3V 0402
2401	4822 124 80151	47μF 16V
2402	4822 124 80151	47μF 16V
2403	3198 035 71040	100nF 10% 16V 0402
2404	3198 035 71040	100nF 10% 16V 0402
2405	3198 035 71040	100nF 10% 16V 0402
2406	3198 035 71040	100nF 10% 16V 0402
2407	3198 035 71040	100nF 10% 16V 0402
2408	3198 035 71040	100nF 10% 16V 0402
2409	3198 035 71040	100nF 10% 16V 0402
2410	3198 035 71040	100nF 10% 16V 0402
2411	3198 035 71040	100nF 10% 16V 0402
2412	3198 035 71040	100nF 10% 16V 0402
2413	3198 035 71040	100nF 10% 16V 0402
2414	3198 035 71040	100nF 10% 16V 0402
2415	3198 035 71040	100nF 10% 16V 0402
2416	3198 035 71040	100nF 10% 16V 0402
2417	4822 124 80151	47μF 16V
2418	4822 124 80151	47μF 16V

2450	3198 035 71040	100nF 10% 16V 0402	2622	2020 552 96834	1µF 20% 6.3V 0402	3010	4822 117 13548	1kΩ 5% 0402
2451	4822 124 80151	47µF 16V	2623	2020 552 96834	1µF 20% 6.3V 0402	3011	4822 117 13543	470Ω 5% 0402
2452	3198 035 71040	100nF 10% 16V 0402	2624	3198 017 44740	470nF 10V 0603	3013	4822 117 13545	100Ω 1% 0402
2453	3198 035 71040	100nF 10% 16V 0402	2625	3198 017 44740	470nF 10V 0603	3015	4822 117 13605	Jumper 0402
2454	3198 035 71040	100nF 10% 16V 0402	2626	3198 017 44740	470nF 10V 0603	3017	4822 117 13605	Jumper 0402
2455	3198 035 71040	100nF 10% 16V 0402	2630	2020 552 96834	1µF 20% 6.3V 0402	3019	4822 117 13545	100Ω 1% 0402
2456	3198 035 71040	100nF 10% 16V 0402	2631	2020 552 96834	1µF 20% 6.3V 0402	3020	4822 117 13548	1kΩ 5% 0402
2461	3198 035 71040	100nF 10% 16V 0402	2632	2020 552 96834	1µF 20% 6.3V 0402	3021	2322 706 72702	2.7kΩ 1% 0402
2462	3198 035 71040	100nF 10% 16V 0402	2633	2020 552 96834	1µF 20% 6.3V 0402	3022	4822 117 13606	10kΩ 5% 0.01W 0402
2463	3198 035 71040	100nF 10% 16V 0402	2634	2020 552 96834	1µF 20% 6.3V 0402	3023	3198 031 01090	10Ω 5% 0.01W 0402
2464	3198 035 71040	100nF 10% 16V 0402	2635	2020 552 96834	1µF 20% 6.3V 0402	3024	3198 031 01090	10Ω 5% 0.01W 0402
2465	5322 124 41945	22µF 20% 35V	2636	3198 035 71040	100nF 10% 16V 0402	3025	3198 031 01090	10Ω 5% 0.01W 0402
2466	3198 035 71040	100nF 10% 16V 0402	2681	2020 552 94427	100pF 5% 50V	3026	3198 031 06890	68Ω 5% 0402
2467	3198 035 71040	100nF 10% 16V 0402	2686	2020 552 94427	100pF 5% 50V	3027	3198 031 01090	10Ω 5% 0.01W 0402
2468	3198 035 71040	100nF 10% 16V 0402	2688	2238 586 59812	100nF 20% 50V 0603	3028	4822 117 11297	100kΩ 5% 0.1W
2469	3198 035 71040	100nF 10% 16V 0402	2693	2238 586 59812	100nF 20% 50V 0603	3029	4822 117 13548	1kΩ 5% 0402
2470	5322 124 41945	22µF 20% 35V	2698	2020 552 94427	100pF 5% 50V	3030	4822 117 11297	100kΩ 5% 0.1W
2471	3198 035 71040	100nF 10% 16V 0402	2699	2020 552 94427	100pF 5% 50V	3032	3198 031 02240	220kΩ 5% 0.1W 0402
2472	3198 035 71040	100nF 10% 16V 0402	2702	2020 552 96834	1µF 20% 6.3V 0402	3035	4822 117 13545	100Ω 1% 0402
2473	3198 035 71040	100nF 10% 16V 0402	2707	2020 021 91871	470µF 20% 16V	3040	3198 031 06830	68kΩ 5% 0.01W 0402
2474	3198 035 71040	100nF 10% 16V 0402	2708	2020 552 96834	1µF 20% 6.3V 0402	3048	4822 117 13606	10kΩ 5% 0.01W 0402
2475	3198 035 71040	100nF 10% 16V 0402	2710	3198 035 04710	470pF 50V 0402	3049	4822 117 13545	100Ω 1% 0402
2476	3198 035 71040	100nF 10% 16V 0402	2711	3198 035 04710	470pF 50V 0402	3050	4822 117 13545	100Ω 1% 0402
2477	3198 035 71040	100nF 10% 16V 0402	2713	2238 586 59812	100nF 20% 50V 0603	3051	4822 117 13545	100Ω 1% 0402
2478	5322 124 41945	22µF 20% 35V	2714	2020 021 91871	470µF 20% 16V	3052	4822 117 13605	Jumper 0402
2479	3198 035 71040	100nF 10% 16V 0402	2715	2020 021 91871	470µF 20% 16V	3056	3198 031 04720	4.7kΩ 5% 0402
2480	3198 035 71040	100nF 10% 16V 0402	2719	2238 586 59812	100nF 20% 50V 0603	3057	4822 117 13545	100Ω 1% 0402
2481	3198 035 71040	100nF 10% 16V 0402	2720	2238 869 15109	10pF 5% 50V 0402	3058	4822 117 13543	470Ω 5% 0402
2482	5322 124 41945	22µF 20% 35V	2743	2020 552 96834	1µF 20% 6.3V 0402	3059	4822 117 13548	1kΩ 5% 0402
2483	3198 035 71040	100nF 10% 16V 0402	2744	2020 552 96834	1µF 20% 6.3V 0402	3060	3198 031 03930	39kΩ 5% 0402
2484	3198 035 71040	100nF 10% 16V 0402	2747	2238 869 15101	100pF 5% 50V 0402	3063	3198 031 06890	68Ω 5% 0402
2485	3198 035 71040	100nF 10% 16V 0402	2748	2238 869 15101	100pF 5% 50V 0402	3065	3198 031 06810	680Ω 5% 0.01W 0402
2486	3198 035 71040	100nF 10% 16V 0402	2749	2238 869 15101	100pF 5% 50V 0402	3066	3198 031 06890	68Ω 5% 0402
2487	4822 126 14519	22pF 5% 50V 0402	2750	2238 869 15101	100pF 5% 50V 0402	3067	3198 031 01090	10Ω 5% 0.01W 0402
2488	4822 126 14519	22pF 5% 50V 0402	2784	4822 126 14241	330pF 0603 50V	3068	3198 031 06890	68Ω 5% 0402
2490	2238 586 59812	100nF 20% 50V 0603	2785	4822 126 14241	330pF 0603 50V	3069	3198 031 01090	10Ω 5% 0.01W 0402
2491	2238 586 59812	100nF 20% 50V 0603	2847	3198 017 41050	1µF 10V 0603	3070	4822 117 13545	100Ω 1% 0402
2492	2238 586 59812	100nF 20% 50V 0603	2848	3198 017 41050	1µF 10V 0603	3072	3198 031 06890	68Ω 5% 0402
2493	2020 552 96807	1µF 10% 10V 0603	2860	2238 869 15109	10pF 5% 50V 0402	3073	3198 031 01530	15kΩ 5% 0.01W 0402
2495	4822 124 80151	47µF 16V	2861	2238 869 15109	10pF 5% 50V 0402	3074	4822 117 11297	100kΩ 5% 0.1W
2496	3198 035 71040	100nF 10% 16V 0402	2862	2238 869 15109	10pF 5% 50V 0402	3075	3198 031 04720	4.7kΩ 5% 0402
2501	4822 124 80151	47µF 16V	2863	2238 869 15109	10pF 5% 50V 0402	3077	3198 031 04720	4.7kΩ 5% 0402
2502	4822 124 11131	47µF 6.3V	2864	2238 869 15109	10pF 5% 50V 0402	3078	3198 031 04720	4.7kΩ 5% 0402
2503	3198 035 71040	100nF 10% 16V 0402	2865	2238 869 15109	10pF 5% 50V 0402	3079	3198 031 04720	4.7kΩ 5% 0402
2504	3198 035 71040	100nF 10% 16V 0402	2866	2238 869 15109	10pF 5% 50V 0402	3080	5322 117 13034	1.5kΩ 1% 0.063W 0603
2505	3198 035 71040	100nF 10% 16V 0402	2867	2238 869 15109	10pF 5% 50V 0402	3081	4822 117 13545	100Ω 1% 0402
2506	3198 035 71040	100nF 10% 16V 0402	2868	2238 869 15109	10pF 5% 50V 0402	3082	3198 031 04720	4.7kΩ 5% 0402
2507	3198 035 71040	100nF 10% 16V 0402	2869	2238 869 15109	10pF 5% 50V 0402	3083	3198 031 04720	4.7kΩ 5% 0402
2508	3198 035 71040	100nF 10% 16V 0402	2874	2238 869 15109	10pF 5% 50V 0402	3084	4822 117 13545	100Ω 1% 0402
2509	3198 035 71040	100nF 10% 16V 0402	2875	2238 869 15109	10pF 5% 50V 0402	3085	3198 031 04720	4.7kΩ 5% 0402
2510	3198 035 71040	100nF 10% 16V 0402	2876	2020 552 96628	10nF 10% 16V 0402	3086	4822 117 13602	2.2kΩ 5% 0.01W 0402
2511	3198 035 71040	100nF 10% 16V 0402	2877	2238 869 15109	10pF 5% 50V 0402	3087	4822 117 13606	10kΩ 5% 0.01W 0402
2512	3198 035 71040	100nF 10% 16V 0402	2878	2020 552 96628	10nF 10% 16V 0402	3088	3198 031 03320	3.3kΩ 5% 0402
2513	3198 035 71040	100nF 10% 16V 0402	2879	2020 552 96628	10nF 10% 16V 0402	3089	3198 031 01540	150kΩ 5% 0402
2514	3198 035 71040	100nF 10% 16V 0402	2880	2238 869 15109	10pF 5% 50V 0402	3091	4822 117 13545	100Ω 1% 0402
2515	3198 035 71040	100nF 10% 16V 0402	2881	2020 552 96628	10nF 10% 16V 0402	3092	3198 031 04720	4.7kΩ 5% 0402
2516	3198 035 71040	100nF 10% 16V 0402	2883	2238 869 15109	10pF 5% 50V 0402	3093	3198 031 04720	4.7kΩ 5% 0402
2517	3198 035 71040	100nF 10% 16V 0402	2884	2020 552 96628	10nF 10% 16V 0402	3094	3198 031 01090	10Ω 5% 0.01W 0402
2526	5322 124 41945	22µF 20% 35V	2887	2238 869 15109	10pF 5% 50V 0402	3096	3198 031 03320	3.3kΩ 5% 0402
2530	4822 124 23002	10µF 16V	2910	3198 035 04710	470pF 50V 0402	3097	3198 031 04720	4.7kΩ 5% 0402
2531	3198 035 71040	100nF 10% 16V 0402	2911	3198 030 72290	22µF 20% 35V	3098	4822 117 13545	100Ω 1% 0402
2532	3198 035 71040	100nF 10% 16V 0402	2920	4822 124 80151	47µF 16V	3101	4822 051 30151	150Ω 5% 0.062W
2533	3198 035 71040	100nF 10% 16V 0402	2921	4822 124 80151	47µF 16V	3102	4822 117 12891	220kΩ 1%
2560	3198 035 71040	100nF 10% 16V 0402	2930	2020 021 91871	470µF 20% 16V	3103	4822 051 30151	150Ω 5% 0.062W
2561	4822 124 12095	100µF 20% 16V	2931	3198 035 04710	470pF 50V 0402	3104	4822 117 12925	47kΩ 1% 0.063W 0603
2562	3198 035 71040	100nF 10% 16V 0402	2933	2020 021 91871	470µF 20% 16V	3105	4822 051 30151	150Ω 5% 0.062W
2563	3198 035 14720	4.7nF 5% 25V 0402	2934	2020 552 96793	4.7nF 10% 50V 0402	3106	4822 117 12891	220kΩ 1%
2564	2020 552 96656	10µF 20% 25V 1210	2935	2020 021 91871	470µF 20% 16V	3107	4822 117 12925	47kΩ 1% 0.063W 0603
2580	3198 035 71040	100nF 10% 16V 0402	2953	2020 021 91871	470µF 20% 16V	3108	4822 051 30151	150Ω 5% 0.062W
2581	3198 035 71040	100nF 10% 16V 0402	2955	3198 035 14720	4.7nF 5% 25V 0402	3109	4822 051 30759	75Ω 5% 0.062W
2582	3198 035 71040	100nF 10% 16V 0402	2956	3198 035 02210	220pF 5% 50V 0402	3110	4822 051 30331	330Ω 5% 0.062W
2583	3198 035 71040	100nF 10% 16V 0402	2957	2020 021 91871	470µF 20% 16V	3111	4822 051 30273	27kΩ 5% 0.062W
2584	3198 035 71040	100nF 10% 16V 0402	2958	2020 021 91871	470µF 20% 16V	3112	4822 051 30682	6.8Ω 5% 0.062W
2585	2238 869 75829	82pF 5% 50V 0402	2960	4822 124 80151	47µF 16V	3113	4822 051 30759	75Ω 5% 0.062W
2586	2238 869 75829	82pF 5% 50V 0402	2961	3198 035 71030	10nF 16V 0402	3114	4822 051 30331	330Ω 5% 0.062W
2587	3198 035 03310	330pF 5% 50V 0402	2992	3198 035 71040	100nF 10% 16V 0402	3115	4822 051 30759	75Ω 5% 0.062W
2588	3198 035 04710	470pF 50V 0402	2993	2020 552 96618	1nF 10% 50V 0402	3116	4822 051 30331	330Ω 5% 0.062W
2605	3198 035 71040	100nF 10% 16V 0402	2994	2020 021 91871	470µF 20% 16V	3117	4822 051 30331	330Ω 5% 0.062W
2606	3198 035 71040	100nF 10% 16V 0402	2995	3198 035 71040	100nF 10% 16V 0402	3118	4822 051 30759	75Ω 5% 0.062W
2607	3198 035 71040	100nF 10% 16V 0402	2996	4822 124 80151	47µF 16V	3119	4822 051 30689	68Ω 5% 0.063W 0603
2608	3198 035 71040	100nF 10% 16V 0402				3120	4822 051 30008	Jumper 0603
2609	3198 035 71040	100nF 10% 16V 0402				3121	4822 051 30759	75Ω 5% 0.062W
2610	3198 035 71040	100nF 10% 16V 0402						

3134	4822 051 30682	6.8kΩ 5% 0.062W	3423	3198 031 03320	3.3kΩ 5% 0.0402	3697	4822 051 30103	10kΩ 5% 0.062W
3135	4822 051 30273	27kΩ 5% 0.062W	3424	2322 704 61501	150Ω 1% 0603	3698	4822 051 30151	150Ω 5% 0.062W
3136	4822 051 30331	330Ω 5% 0.062W	3425	4822 117 13606	10kΩ 5% 0.01W 0402	3699	4822 051 30151	150Ω 5% 0.062W
3137	4822 051 30759	75Ω 5% 0.062W	3426	3198 031 03320	3.3kΩ 5% 0.0402	3700	4822 117 12925	47kΩ 1% 0.063W 0603
3138	4822 117 13632	100kΩ 1% 0603 0.62W	3428	4822 117 13606	10kΩ 5% 0.01W 0402	3701	4822 117 13548	1kΩ 5% 0.0402
3139	4822 117 13632	100kΩ 1% 0603 0.62W	3429	4822 117 13606	10kΩ 5% 0.01W 0402	3702	4822 117 13606	10kΩ 5% 0.01W 0402
3140	4822 051 30689	68Ω 5% 0.063W 0603	3432	4822 117 13606	10kΩ 5% 0.01W 0402	3703	4822 117 13606	10kΩ 5% 0.01W 0402
3141	4822 051 30102	1kΩ 5% 0.062W	3433	4822 117 13606	10kΩ 5% 0.01W 0402	3705	4822 117 13606	10kΩ 5% 0.01W 0402
3142	4822 051 30331	330Ω 5% 0.062W	3436	4822 117 13606	10kΩ 5% 0.01W 0402	3711	4822 117 13605	Jumper 0402
3143	4822 051 30759	75Ω 5% 0.062W	3437	4822 117 13606	10kΩ 5% 0.01W 0402	3712	4822 117 13606	10kΩ 5% 0.01W 0402
3144	4822 051 30151	150Ω 5% 0.062W	3438	3198 031 11030	4 x 10kΩ 5% 1206	3713	4822 117 13606	10kΩ 5% 0.01W 0402
3145	4822 051 30151	150Ω 5% 0.062W	3439	3198 031 11030	4 x 10kΩ 5% 1206	3718	4822 117 13605	Jumper 0402
3146	4822 051 30151	150Ω 5% 0.062W	3440	3198 031 11030	4 x 10kΩ 5% 1206	3723	4822 117 13548	1kΩ 5% 0.0402
3147	4822 051 30151	150Ω 5% 0.062W	3441	3198 031 11030	4 x 10kΩ 5% 1206	3724	4822 117 13606	10kΩ 5% 0.01W 0402
3148	4822 051 30151	150Ω 5% 0.062W	3442	3198 031 11030	4 x 10kΩ 5% 1206	3729	3198 031 03320	3.3kΩ 5% 0.0402
3149	4822 051 30151	150Ω 5% 0.062W	3443	4822 117 13606	10kΩ 5% 0.01W 0402	3730	3198 031 03320	3.3kΩ 5% 0.0402
3150	4822 051 30151	150Ω 5% 0.062W	3444	4822 051 30103	10kΩ 5% 0.062W	3731	4822 117 13543	470Ω 5% 0.0402
3151	4822 051 30151	150Ω 5% 0.062W	3446	5322 117 13017	100Ω 1% 0.063W 0603	3732	4822 117 13548	1kΩ 5% 0.0402
3152	4822 117 12891	220kΩ 1%	3447	3198 031 02290	22Ω 5% 0.1W 0402	3733	4822 117 13543	470Ω 5% 0.0402
3153	4822 051 30151	150Ω 5% 0.062W	3448	3198 031 01090	10Ω 5% 0.01W 0402	3739	4822 117 13601	22kΩ 5% 0.0402
3155	4822 117 12891	220kΩ 1%	3501	4822 117 12706	10kΩ 1% 0.063W 0603	3740	4822 117 13601	22kΩ 5% 0.0402
3156	4822 051 30151	150Ω 5% 0.062W	3502	4822 117 12706	10kΩ 1% 0.063W 0603	3741	4822 117 11297	100kΩ 5% 0.1W
3169	4822 051 30479	47Ω 5% 0.062W	3503	2322 704 61501	150Ω 1% 0603	3742	4822 117 13601	22kΩ 5% 0.0402
3251	4822 117 11151	1Ω 5%	3531	4822 117 13606	10kΩ 5% 0.01W 0402	3743	4822 117 13601	22kΩ 5% 0.0402
3259	4822 117 13606	10kΩ 5% 0.01W 0402	3532	4822 117 13606	10kΩ 5% 0.01W 0402	3745	4822 117 11297	100kΩ 5% 0.1W
3260	3198 031 06820	6.8kΩ 5% 0.01W 0402	3534	4822 117 13548	1kΩ 5% 0.0402	3752	3198 031 01510	150Ω 5% 0.01W 0402
3266	3198 031 04720	4.7kΩ 5% 0.0402	3536	4822 117 13606	10kΩ 5% 0.01W 0402	3753	3198 031 01510	150Ω 5% 0.01W 0402
3267	5322 117 13031	5.6kΩ 1% 0.063W 0603	3538	3198 031 11030	4 x 10kΩ 5% 1206	3781	4822 117 12925	47kΩ 1% 0.063W 0603
3268	2322 704 63302	3.3kΩ 1% 0603	3539	3198 031 11030	4 x 10kΩ 5% 1206	3782	4822 051 30151	150Ω 5% 0.062W
3270	4822 117 13602	2.2kΩ 5% 0.01W 0402	3540	3198 031 11030	4 x 10kΩ 5% 1206	3783	4822 051 30103	10kΩ 5% 0.062W
3271	4822 117 13543	470Ω 5% 0.0402	3544	3198 031 11030	4 x 10kΩ 5% 1206	3784	4822 051 30102	1kΩ 5% 0.062W
3273	3198 031 02240	220kΩ 5% 0.1W 0402	3545	3198 031 11030	4 x 10kΩ 5% 1206	3788	4822 051 30102	1kΩ 5% 0.062W
3274	4822 117 13601	22kΩ 5% 0.0402	3546	3198 031 11030	4 x 10kΩ 5% 1206	3836	4822 117 13606	10kΩ 5% 0.01W 0402
3302	4822 051 30101	100Ω 5% 0.062W	3547	3198 031 11030	4 x 10kΩ 5% 1206	3838	4822 117 13606	10kΩ 5% 0.01W 0402
3303	4822 051 30101	100Ω 5% 0.062W	3548	4822 117 13606	10kΩ 5% 0.01W 0402	3876	3198 031 06890	68Ω 5% 0.0402
3304	4822 117 13606	10kΩ 5% 0.01W 0402	3549	4822 051 30102	1kΩ 5% 0.062W	3877	3198 031 06890	68Ω 5% 0.0402
3305	4822 117 13606	10kΩ 5% 0.01W 0402	3550	4822 051 30102	1kΩ 5% 0.062W	3879	3198 031 06890	68Ω 5% 0.0402
3309	4822 117 13606	10kΩ 5% 0.01W 0402	3551	4822 051 30102	1kΩ 5% 0.062W	3883	3198 031 06890	68Ω 5% 0.0402
3311	4822 051 30103	10kΩ 5% 0.062W	3552	4822 051 30102	1kΩ 5% 0.062W	3886	4822 117 13606	10kΩ 5% 0.01W 0402
3319	4822 051 30273	27kΩ 5% 0.062W	3553	4822 051 30102	1kΩ 5% 0.062W	3887	4822 117 13606	10kΩ 5% 0.01W 0402
3320	4822 051 30183	18kΩ 5% 0.062W	3560	4822 117 11297	100kΩ 5% 0.1W	3910	4822 117 13602	2.2kΩ 5% 0.01W 0402
3321	4822 051 30222	2.2kΩ 5% 0.062W	3561	4822 117 11297	100kΩ 5% 0.1W	3911	4822 117 13548	1kΩ 5% 0.0402
3322	4822 051 30682	6.8kΩ 5% 0.062W	3562	4822 117 11297	100kΩ 5% 0.1W	3930	4822 117 12917	1Ω 5% 0.062W
3323	4822 051 30222	2.2kΩ 5% 0.062W	3563	4822 117 13548	1kΩ 5% 0.0402	3931	4822 117 12917	1Ω 5% 0.062W
3327	4822 117 13548	1kΩ 5% 0.0402	3564	3198 031 01220	1.2kΩ 5% 0.01W 0402	3932	2322 704 61002	1kΩ 1%
3328	4822 117 13545	100Ω 1% 0.0402	3565	4822 117 13548	1kΩ 5% 0.0402	3933	2322 704 63302	3.3kΩ 1% 0603
3329	4822 117 13545	100Ω 1% 0.0402	3566	4822 117 13548	1kΩ 5% 0.0402	3951	4822 117 12917	1Ω 5% 0.062W
3340	4822 117 13601	22kΩ 5% 0.0402	3567	4822 117 13548	1kΩ 5% 0.0402	3952	4822 117 12917	1Ω 5% 0.062W
3342	4822 117 13606	10kΩ 5% 0.01W 0402	3568	4822 117 13548	1kΩ 5% 0.0402	3953	2322 704 61002	1kΩ 1%
3343	3198 031 04720	4.7kΩ 5% 0.0402	3579	4822 117 13548	1kΩ 5% 0.0402	3954	2322 704 63302	3.3kΩ 1% 0603
3344	4822 117 13548	1kΩ 5% 0.0402	3580	4822 117 13543	470Ω 5% 0.0402	3955	4822 117 13606	10kΩ 5% 0.01W 0402
3345	3198 031 04720	4.7kΩ 5% 0.0402	3581	3198 031 04730	47Ω 5% 0.0402	3958	3198 031 01530	15kΩ 5% 0.01W 0402
3346	2322 706 75603	56kΩ 1% 0.0402	3605	4822 117 13545	100Ω 1% 0.0402	4002	4822 117 13605	Jumper 0402
3347	3198 031 08210	820Ω 5% 0.5W	3606	4822 117 13545	100Ω 1% 0.0402	4005	4822 117 13605	Jumper 0402
3348	3198 031 04720	4.7kΩ 5% 0.0402	3607	4822 117 13545	100Ω 1% 0.0402	4007	4822 117 13605	Jumper 0402
3349	3198 031 01820	1.8kΩ 5% 0.01W 0402	3608	4822 117 13545	100Ω 1% 0.0402	4008	4822 117 13605	Jumper 0402
3357	4822 117 13548	1kΩ 5% 0.0402	3609	4822 117 13545	100Ω 1% 0.0402	4017	4822 117 13605	Jumper 0402
3358	4822 117 13545	100Ω 1% 0.0402	3610	4822 117 13601	22kΩ 5% 0.0402	4018	4822 117 13605	Jumper 0402
3359	3198 031 03910	390Ω 1% 0.0402	3612	4822 117 13543	470Ω 5% 0.0402	4023	4822 117 13605	Jumper 0402
3370	3198 031 06810	680Ω 5% 0.01W 0402	3613	3198 031 02290	22Ω 5% 0.1W 0402	4062	4822 117 13605	Jumper 0402
3371	4822 117 13545	100Ω 1% 0.0402	3614	3198 031 02290	22Ω 5% 0.1W 0402	4327	4822 051 30008	Jumper 0603
3372	4822 117 13545	100Ω 1% 0.0402	3615	3198 031 02290	22Ω 5% 0.1W 0402	4331	4822 051 30008	Jumper 0603
3374	5322 117 11726	10Ω 5%	3616	3198 031 02290	22Ω 5% 0.1W 0402	4333	4822 051 30008	Jumper 0603
3378	4822 117 13545	100Ω 1% 0.0402	3617	3198 031 02290	22Ω 5% 0.1W 0402	4334	4822 051 30008	Jumper 0603
3380	4822 117 13606	10kΩ 5% 0.01W 0402	3618	3198 031 02290	22Ω 5% 0.1W 0402	4360	4822 117 13605	Jumper 0402
3381	4822 117 13606	10kΩ 5% 0.01W 0402	3619	3198 031 08210	820Ω 5% 0.5W	4361	4822 117 13605	Jumper 0402
3382	4822 117 13606	10kΩ 5% 0.01W 0402	3620	4822 117 13632	100kΩ 1% 0603 0.62W	4362	4822 117 13605	Jumper 0402
3383	4822 117 13606	10kΩ 5% 0.01W 0402	3621	4822 117 13601	22kΩ 5% 0.0402	4363	4822 117 13605	Jumper 0402
3386	4822 117 13545	100Ω 1% 0.0402	3622	4822 117 13601	22kΩ 5% 0.0402	4444	4822 051 30008	Jumper 0603
3389	4822 117 13545	100Ω 1% 0.0402	3623	4822 117 13601	22kΩ 5% 0.0402	4580	4822 117 13605	Jumper 0402
3390	4822 117 13545	100Ω 1% 0.0402	3624	4822 117 13601	22kΩ 5% 0.0402	4581	4822 117 13605	Jumper 0402
3391	4822 117 13545	100Ω 1% 0.0402	3625	4822 117 13601	22kΩ 5% 0.0402	4583	4822 117 13605	Jumper 0402
3392	4822 117 13545	100Ω 1% 0.0402	3626	4822 117 13601	22kΩ 5% 0.0402	4593	4822 117 13605	Jumper 0402
3393	4822 117 13545	100Ω 1% 0.0402	3633	4822 117 13545	100Ω 1% 0.0402	4601	4822 117 13605	Jumper 0402
3394	3198 031 07590	75Ω 5% 0.0402	3634	4822 117 13545	100Ω 1% 0.0402	4602	4822 117 13605	Jumper 0402
3401	2350 035 10229	4 x 22Ω 5%	3635	4822 117 13545	100Ω 1% 0.0402	4603	4822 117 13605	Jumper 0402
3402	2350 035 10229	4 x 22Ω 5%	3638	4822 117 13545	100Ω 1% 0.0402	4608	4822 117 13605	Jumper 0402
3403	2350 035 10229	4 x 22Ω 5%	3639	4822 117 13545	100Ω 1% 0.0402	4708	4822 051 30008	Jumper 0603
3404	2350 035 10229	4 x 22Ω 5%	3641	4822 117 13597	330Ω 5% 0.0402 0.01W	4710	4822 117 13605	Jumper 0402
3405	2350 035 10229	4 x 22Ω 5%	3642	4822 117 13597	330Ω 5% 0.0402 0.01W	4711	4822 117 13605	Jumper 0402
3406	2350 035 10229	4 x 22Ω 5%	3643	4822 117 13597	330Ω 5% 0.0402 0.01W	4720	4822 051 30008	Jumper 0603
3407	2350 035 10229	4 x 22Ω 5%	3644	4822 117 13597	330Ω 5% 0.0402 0.01W	4836	4822 051 30008	Jumper 0603
3408	2350 035 10229	4 x 22Ω 5%	3645	4822 117 13597	330Ω 5% 0.0402 0.01W	4838	4822 051 30008	Jumper 0603
3409	2350 035 10229	4 x 22Ω 5%	3646	4822 117 13597	330Ω 5% 0.0402 0.01W			
3410	2350 035 10229	4 x 22Ω 5%	3680	4822 051 30222	2.2kΩ 5% 0.062W			
3411								

5008	4822 157 11716	Bead 30Ω at 100MHz
5010	3198 018 64790	47μF 5% 1008
5060	4822 157 11716	Bead 30Ω at 100MHz
5066	3198 018 51080	1μH 10% 0603
5067	3198 018 51080	1μH 10% 0603
5070	4822 157 11716	Bead 30Ω at 100MHz
5071	2422 549 42896	Bead 120Ω 100MHz
5072	2422 549 42896	Bead 120Ω 100MHz
5139	4822 051 20008	Jumper 0805
5251	2422 549 45333	Bead 120Ω 100MHz
5252	2422 549 45333	Bead 120Ω 100MHz
5257	2422 549 45333	Bead 120Ω 100MHz
5258	2422 549 45333	Bead 120Ω 100MHz
5262	2422 535 94134	10μH 20% 0805
5267	2422 536 00339	33μ 20%
5268	2422 535 94995	10μF 20% 10145
5304	4822 157 11499	Bead 60Ω 100MHz
5309	3198 018 31290	12μH 10%
5321	3198 018 33970	0.39μF 10% 0805
5324	4822 157 71334	0.68μH
5370	4822 157 11716	Bead 30Ω at 100MHz
5371	4822 157 11716	Bead 30Ω at 100MHz
5372	4822 157 11716	Bead 30Ω at 100MHz
5530	2422 549 45333	Bead 120Ω 100MHz
5560	4822 157 11716	Bead 30Ω at 100MHz
5580	4822 157 71304	1μH
5605	2422 549 45333	Bead 120Ω 100MHz
5607	2422 549 45333	Bead 120Ω 100MHz
5636	2422 549 45333	Bead 120Ω 100MHz
5680	2422 549 45333	Bead 120Ω 100MHz
5683	2422 549 45333	Bead 120Ω 100MHz
5684	2422 549 45333	Bead 120Ω 100MHz
5685	2422 549 45333	Bead 120Ω 100MHz
5686	2422 549 45333	Bead 120Ω 100MHz
5687	2422 549 45333	Bead 120Ω 100MHz
5720	4822 157 11716	Bead 30Ω at 100MHz
5721	4822 157 11716	Bead 30Ω at 100MHz
5722	4822 157 11716	Bead 30Ω at 100MHz
5874	2422 549 45333	Bead 120Ω 100MHz
5910	2422 536 00667	1000μF 20% 7032
5920	2422 549 45333	Bead 120Ω 100MHz
5930	2422 535 94134	10μH 20% 0805
5931	2422 536 00689	220μF 20%
5932	2422 535 94134	10μH 20% 0805
5952	2422 535 94134	10μH 20% 0805
5953	2422 536 00689	220μF 20%
5954	2422 535 94134	10μH 20% 0805
5956	2422 549 45333	Bead 120Ω 100MHz
5957	2422 549 45333	Bead 120Ω 100MHz
5984	2422 549 45333	Bead 120Ω 100MHz
5985	2422 549 45333	Bead 120Ω 100MHz
5986	2422 549 45333	Bead 120Ω 100MHz
5987	2422 549 45333	Bead 120Ω 100MHz
5988	2422 549 45333	Bead 120Ω 100MHz
5989	2422 549 45333	Bead 120Ω 100MHz
5990	2422 549 45333	Bead 120Ω 100MHz
5991	2422 549 45333	Bead 120Ω 100MHz
5994	2422 549 45333	Bead 120Ω 100MHz
5996	2422 549 45333	Bead 120Ω 100MHz
5997	2422 549 45333	Bead 120Ω 100MHz
5998	2422 549 45333	Bead 120Ω 100MHz

-H-

6001	4822 130 11397	BAS316
6002	4822 130 11397	BAS316
6005	9340 553 52115	BAS321
6020	4822 130 11397	BAS316
6021	4822 130 11397	BAS316
6075	4822 130 80622	BAT54
6076	4822 130 80622	BAT54
6121	4822 130 11416	PDZ6.8B
6143	4822 130 11416	PDZ6.8B
6259	9322 128 70685	SMSS14
6262	3198 010 10720	SS24
6267	3198 010 10730	SS36
6270	4822 130 10837	UDZS8.2B
6310	4822 130 11397	BAS316
6323	4822 130 11525	1SS356
6328	4822 130 11416	PDZ6.8B
6329	4822 130 11416	PDZ6.8B
6330	4822 130 11416	PDZ6.8B
6331	4822 130 11416	PDZ6.8B
6563	9322 102 64685	UDZ2.7B
6564	4822 130 11416	PDZ6.8B
6565	4822 130 10838	UDZ3.3B
6604	4822 130 11397	BAS316
6605	4822 130 11397	BAS316
6634	9322 102 64685	UDZ2.7B
6635	9322 102 64685	UDZ2.7B
6638	9322 102 64685	UDZ2.7B
6639	9322 102 64685	UDZ2.7B
6693	4822 130 11397	BAS316



7001	9339 693 90135	BCP69-25
7002	9340 425 20115	BC847BS
7003	9339 693 90135	BCP69-25
7004	3198 010 42310	BC847BW
7005	9340 547 13215	BSH103
7011	For SW see item 0601	
7012	3198 010 42310	BC847BW
7013	3198 010 42310	BC847BW
7014	3198 010 42310	BC847BW
7015	9322 208 05668	SM NE555D
7016	9322 208 05668	SM NE555D
7017	9322 208 05668	SM NE555D
7018	5322 130 60159	BC846B
7019	5322 130 60159	BC846B
7051	3104 317 07851	SW (check Prod. Survey)
7054	3104 317 06681	SW (check Prod. Survey)
7070	9340 547 13215	BSH103
7075	4822 130 11155	PDT0C114ET
7099	4822 209 17226	M24C08-WMN6
7119	5322 130 60159	BC846B
7138	5322 130 60159	BC846B
7260	9322 139 16668	LF33CPT
7262	9322 202 34668	L5973D
7271	3198 010 42310	BC847BW
7272	3198 010 42310	BC847BW
7320	3198 010 42310	BC847BW
7370	9340 550 49115	PUMH7
7371	9340 550 49115	PUMH7
7372	9340 550 49115	PUMH7
7376	9340 425 10115	BC857BS
7377	9340 425 10115	BC857BS
7401	9322 206 86671	GM1501-BD
7416	9322 157 51685	SH12301DS
7501	9322 199 17671	K4D263238M-QC50
7530	For SW see item 7051	
7532	9352 691 71115	NE56610-27GW
7560	9352 334 10118	TD9178T/N1
7561	3198 010 42310	BC847BW
7562	9322 199 24668	L7808CD2T
7563	4822 209 73852	PMBT2369
7579	4822 130 11155	PDT0C114ET
7580	9322 199 16668	M74HC590T
7581	9322 199 16668	M74HC590T
7582	9322 201 05671	CY62256LL-70ZC
7583	9351 870 00118	74HC573PW
7584	9351 870 00118	74HC573PW
7585	3198 010 42310	BC847BW
7604	9352 607 39118	74LVC14APW
7605	4822 209 60792	74HC4053D
7606	9322 199 56668	ADG781BCP
7607	9322 199 80668	SM5301BS-G
7693	For SW see item 7054	
7706	9351 742 70118	74HC08PW
7708	9340 550 49115	PUMH7
7710	9340 310 50215	PDTA143ET
7713	3198 010 42310	BC847BW
7714	3198 010 42310	BC847BW
7740	9322 183 05668	TS482ID
7887	3198 010 42310	BC847BW
7910	4822 130 42804	BC817-25
7920	9322 163 24668	L78M08CDT
7930	5322 209 90529	MC34063AD
7952	5322 209 90529	MC34063AD
7954	9322 157 51685	SH12301DS
7955	4822 130 11155	PDT0C114ET
7992	9322 142 88668	LF25CDT
7995	9322 189 19668	LD1086D2T18

LCD Supply 30"/32" [AS]

Various

1007▲	4822 071 55002	Fuse T5A 250V
1304	2422 025 10647	Connector 4p m
1304	2422 025 10648	Connector 8p m
1305	4822 267 10735	Connector 3p
1306	2422 025 16374	Connector 2p m
1307	2422 025 10647	Connector 4p m
1308	4822 265 20723	Connector 2p
1309	2422 025 11143	Connector 3p m
1400▲	4822 253 50145	Fuse 3.15A T
1401▲	4822 252 11224	191811(1,0A)
1402▲	4822 252 60151	DSP-501N-A21F

1410▲	4822 265 11253	Fuse holder
1411▲	4822 265 11253	Fuse holder
1450▲	2422 132 07411	Relay 1p 5V 5A G5PA-1
1M02	2422 025 11244	Connector 7p m

-I-

2000▲	2252 811 95022	1.5nF 20% 250V
2002	4822 124 11767	470μF 20% 25V
2003	4822 124 80061	1000μF 20% 25V
2007	4822 126 14583	470nF 10% 16V 0805
2008	4822 126 14583	470nF 10% 16V 0805
2009	2238 867 18101	100pF 1% 50V 0603
2010	4822 124 40207	100μF 20% 25V
2011	2022 333 00119	10nF 5% 1.6 KV
2012	4822 126 13862	1.5nF 10% 2kV
2013	4822 126 13862	1.5nF 10% 2kV
2014▲	2252 811 95018	2.2nF 20% 250V
2014▲	4822 126 13451	2.2nF 10% 2kV
2015	5322 126 11583	10nF 10% 50V 0603
2016	2238 586 59812	100nF 20% 50V 0603
2017	2022 333 00119	10nF 5% 1.6 KV
2019	5322 126 11583	10nF 10% 50V 0603
2020	2020 021 00012	2200μF 20% 16V
2021	2020 021 00012	2200μF 20% 16V
2022	4822 124 11583	2200μF 20% 35V
2022	4822 124 81168	2200U 20% 35V
2023	4822 126 14583	470nF 10% 16V 0805
2024	2020 552 96326	220nF 10% 16V
2025	2020 552 96683	220nF 10% 50V
2026	4822 126 14238	2.2nF 50V 0603
2028	5322 126 11578	1nF 10% 50V 0603
2029	5322 126 11578	1nF 10% 50V 0603
2033	2020 552 96683	220nF 10% 50V
2034	2238 867 18101	100pF 1% 50V 0603
2035	2238 867 18101	100pF 1% 50V 0603
2036	4822 126 14583	470nF 10% 16V 0805
2037	4822 126 14583	470nF 10% 16V 0805
2038	4822 124 11583	2200μF 20% 35V
2038	4822 124 81168	2200U 20% 35V
2039	4822 126 14583	470nF 10% 16V 0805
2039	5322 126 11583	10nF 10% 50V 0603
2040	4822 126 14249	560pF 10% 50V 0603
2041	2020 552 96683	220nF 10% 50V
2042	2020 552 96683	220nF 10% 50V
2043	2020 552 96683	220nF 10% 50V
2044	5322 126 11578	1nF 10% 50V 0603
2045	5322 126 11578	1nF 10% 50V 0603
2046	3198 017 34730	47nF 16V 0603
2047	5322 126 11583	10nF 10% 50V 0603
2048	5322 126 11578	1nF 10% 50V 0603
2050	5322 126 11578	1nF 10% 50V 0603
2051	2020 552 96683	220nF 10% 50V
2052	2020 552 96683	220nF 10% 50V
2053	2020 552 96683	220nF 10% 50V
2060	4822 126 14238	2.2nF 50V 0603
2061	4822 126 14238	2.2nF 50V 0603
2062	4822 126 14238	2.2nF 50V 0603
2063	4822 126 13881	470pF 5% 50V
2064	4822 126 13881	470pF 5% 50V
2065	4822 126 14238	2.2nF 50V 0603
2071	5322 126 11578	1nF 10% 50V 0603
2072	5322 126 11578	1nF 10% 50V 0603
2077	4822 126 14238	2.2nF 50V 0603
2290	5322 126 11583	10nF 10% 50V 0603
2291	4822 126 13881	470pF 5% 50V
2292	2020 021 91354	1000μF 20% 50V
2292	4822 124 12417	2200μF 20% 25V
2293	4822 126 13881	470pF 5% 50V
2294	2020 021 91354	1000μF 20% 50V
2294	4822 124 12417	2200μF 20% 25V
2400▲	2222 338 22474	470nF 20% 275V
2407▲	2252 811 95065	220pF 10% 250V
2503	2020 024 90718	10μF 20% 450V
2803	2222 365 55563	56nF 10% 400V
2804	2222 365 55563	56nF 10% 400V
2816	2020 024 90749	330μF 20% 400V

-W-

3000▲	4822 052 10478	4.7Ω 5% 0.33W
3001	4822 051 30101	100Ω 5% 0.062W
3002	4822 051 30103	10kΩ 5% 0.062W
3002	4822 051 30223	22kΩ 5% 0.062W
3003	4822 117 13632	1

3011	4822 051 30471	47Ω 5% 0.062W
3012	4822 051 30153	15kΩ 5% 0.062W
3013	4822 051 30103	10kΩ 5% 0.062W
3014▲	4822 052 10101	100Ω 5% 0.33W
3015▲	4822 052 10479	47Ω 5% 0.33W
3016	4822 051 30332	3.3Ω 5% 0.062W
3017▲	4822 052 10101	100Ω 5% 0.33W
3018▲	4822 052 10479	47Ω 5% 0.33W
3019	4822 051 30332	3.3Ω 5% 0.062W
3020	4822 051 30332	3.3Ω 5% 0.062W
3021	4822 117 12139	22Ω 5% 0.062W
3021	4822 117 12971	15Ω 5% 0.0603 0.62W
3022	4822 051 30681	680Ω 5% 0.062W
3023	4822 051 30153	15kΩ 5% 0.062W
3024	2322 704 63303	33kΩ 1% 0.603
3025	4822 117 12903	1.8kΩ 1% 0.063W 0.603
3026	4822 101 11383	Trimmer 470Ω 30% linear
3027	4822 117 13632	100kΩ 1% 0.0603 0.62W
3028	4822 051 30332	3.3Ω 5% 0.062W
3029	4822 051 30332	3.3Ω 5% 0.062W
3030	4822 051 30183	18kΩ 5% 0.062W
3031	4822 051 30103	10kΩ 5% 0.062W
3032	4822 051 30103	10kΩ 5% 0.062W
3033▲	4822 052 11108	1Ω 5% 0.5W
3034	4822 051 30102	1kΩ 5% 0.062W
3035	4822 051 30332	3.3Ω 5% 0.062W
3036	4822 117 13632	100kΩ 1% 0.0603 0.62W
3039	4822 051 30102	1kΩ 5% 0.062W
3040	5322 117 13056	8.2kΩ 1% 0.063W 0.603
3041	4822 051 30333	33kΩ 5% 0.062W
3042	4822 051 30123	12kΩ 5% 0.1W
3043	4822 051 30109	10Ω 5% 0.062W
3044	4822 051 30471	47Ω 5% 0.062W
3045	4822 117 12139	22Ω 5% 0.062W
3045	4822 117 12971	15Ω 5% 0.0603 0.62W
3046	4822 117 12139	22Ω 5% 0.062W
3046	4822 117 12971	15Ω 5% 0.0603 0.62W
3047	4822 051 30479	47Ω 5% 0.062W
3048	4822 051 30272	2.7kΩ 5% 0.062W
3049	4822 051 30333	33kΩ 5% 0.062W
3050	4822 050 28204	820kΩ 1% 0.6W
3051	4822 051 30472	4.7Ω 5% 0.062W
3052	2322 704 61603	16kΩ 1% 0.603
3053	4822 050 26804	680kΩ 1% 0.6W
3054	4822 051 30472	4.7Ω 5% 0.062W
3055	4822 051 30221	220Ω 5% 0.062W
3056	4822 051 30221	220Ω 5% 0.062W
3057	4822 051 30221	220Ω 5% 0.062W
3058	4822 053 20565	5.6MΩ 5% 0.25W
3059	4822 051 30222	2.2kΩ 5% 0.062W
3061	4822 051 30683	68kΩ 5% 0.062W
3064	4822 051 30103	10kΩ 5% 0.062W
3065	4822 117 13632	100kΩ 1% 0.0603 0.62W
3066	4822 051 30103	10kΩ 5% 0.062W
3067	4822 051 30101	100Ω 5% 0.062W
3068	4822 051 30222	2.2kΩ 5% 0.062W
3070	4822 051 30102	1kΩ 5% 0.062W
3071	4822 051 30103	10kΩ 5% 0.062W
3075	4822 051 30102	1kΩ 5% 0.062W
3100	4822 051 30102	1kΩ 5% 0.062W
3100	4822 051 30109	10Ω 5% 0.062W
3292	4822 051 30561	560Ω 5% 0.062W
3400▲	2122 550 00158	VDR 1mA 612V
3401▲	4822 053 21475	4.7MΩ 5% 0.5W
3402▲	4822 053 21475	4.7MΩ 5% 0.5W
3403▲	4822 053 21475	4.7MΩ 5% 0.5W
3404	4822 116 83872	220Ω 5% 0.5W
3810	2322 257 41123	12kΩ 5% 5W
3999	4822 117 12925	47kΩ 1% 0.063W 0.603
9002	4822 051 30008	Jumper 0603
9009	4822 051 30008	Jumper 0603
9030	4822 051 30008	Jumper 0603
9047	4822 051 30008	Jumper 0603
9085	4822 051 30008	Jumper 0603

5001	2422 531 02444	Transf. S13932-04Y
5002▲	8204 000 77311	Transf. 2652.0001
5004	4822 526 10704	Bead 100MHz
5005	4822 157 11411	Bead 100MHz
5005	4822 526 10704	Bead 100MHz
5007	4822 157 11411	Bead 100MHz
5007	4822 526 10704	Bead 100MHz
5008	4822 157 11411	Bead 100MHz
5008	4822 526 10704	Bead 100MHz
5009	4822 157 11411	Bead 100MHz
5010	4822 157 11411	Bead 100MHz
5013	4822 157 11411	Bead 100MHz
5013	4822 526 10704	Bead 100MHz
5015	4822 157 11411	Bead 100MHz
5016	4822 157 11411	Bead 100MHz
5017	4822 526 10704	Bead 100MHz

5025	4822 526 10704	Bead 100MHz
5026	4822 526 10704	Bead 100MHz
5027	4822 526 10704	Bead 100MHz
5028	4822 526 10704	Bead 100MHz
5029	4822 526 10704	Bead 100MHz
5030	4822 526 10704	Bead 100MHz
5031	4822 526 10704	Bead 100MHz
5032	4822 526 10704	Bead 100MHz
5034	4822 526 10704	Bead 100MHz
5040	4822 157 11411	Bead 100MHz
5041	4822 526 10704	Bead 100MHz
5291	2422 536 00776	33μH 10%
5292	2422 536 00776	33μH 10%
5293	2422 536 00776	33μH 10%
5401▲	2422 549 43291	Filter 47mH 2A
5403	3104 308 21191	Coil DTH40323H65



6002	4822 130 11397	BAS316
6003	4822 130 11397	BAS316
6004	4822 130 11397	BAS316
6004	4822 130 80622	BAT54
6005	4822 130 11397	BAS316
6005	4822 130 80622	BAT54
6006	4822 130 11397	BAS316
6007	4822 130 11397	BAS316
6008	4822 130 11397	BAS316
6009	4822 130 11152	UDZ18B
6010	4822 130 11397	BAS316
6011	4822 130 11397	BAS316
6012	9322 197 30685	SML4744
6013	9322 197 30685	SML4744
6017	4822 130 11397	BAS316
6020	4822 130 11397	BAS316
6021	9322 206 26687	STPS20H100CT
6022	4822 130 11148	UDZ4.7B
6023	4822 130 11397	BAS316
6025	9322 206 26687	STPS20H100CT
6027	4822 130 11397	BAS316
6028	4822 130 11397	BAS316
6030	4822 130 11397	BAS316
6044	9322 207 11687	STPS20L45CT
6045	9322 207 11687	STPS20L45CT
6051	4822 130 11397	BAS316
6054	4822 130 11551	UDZS10B
6077	9322 202 55685	BYG22D
6078	9322 202 55685	BYG22D
6079	9322 202 55685	BYG22D
6080	9322 202 55685	BYG22D
6081	9340 548 67115	PDZ22B
6291	4822 130 11572	STPS8H100F
6293	4822 130 11572	STPS8H100F
6460	4822 130 11397	BAS316
6461	4822 130 11397	BAS316
6506▲	4822 130 83147	DF06M
6807▲	9322 199 74682	GBJ6J-B15



7001	9322 108 21682	MC34067P
7002▲	9322 149 04682	TCET1102
7004	3198 010 42310	BC847BW
7005	9322 192 18687	STP15NK50ZFP
7005	9322 205 26687	FQPF18N50V2
7006	9322 205 26687	FQPF18N50V2
7007	3198 010 42320	BC857BW
7008	3198 010 42320	BC857BW
7009	3198 010 42320	BC857BW
7010	4822 209 16406	TL431ACD
7010	9322 125 09668	TL431AID
7017	3198 010 42320	BC857BW
7018	3198 010 42310	BC847BW
7030	3198 010 42310	BC847BW
7031	3198 010 42310	BC847BW

Side I/O Panel [D]

Various

0900	2422 026 05133	Connector SVHS 4p f
0901	4822 267 10975	Connector 3p
0902	4822 267 31014	Socket head phone
0936	2422 025 12485	Connector 11p m
1900	2422 026 05133	Connector SVHS 4p f
1901	4822 267 10975	Connector 3p
1902	4822 267 31014	Socket head phone
1936	2422 025 12485	Connector 11p m
8936	3104 311 06121	Cable 11p560/11p



2903	5322 122 32531	100pF 5% 50V
2904	5322 122 32531	100pF 5% 50V
2905	4822 122 33177	10nF 20% 50V
2905	5322 122 32654	22nF 10% 63V 0805
2906	4822 122 33177	10nF 20% 50V
2906	5322 122 32654	22nF 10% 63V 0805



3901	4822 117 11373	100Ω 1% 0.805
3902	4822 116 52201	75Ω 5% 0.5W
3903	4822 117 11373	100Ω 1% 0.805
3904	4822 116 52201	75Ω 5% 0.5W
3905	4822 050 11002	1kΩ 1% 0.4W
3906	4822 050 11002	1kΩ 1% 0.4W
3908	4822 050 11002	1kΩ 1% 0.4W
3910	4822 116 52276	3.9Ω 5% 0.5W
3911	4822 050 21003	10kΩ 1% 0.6W
3912	4822 050 21003	10kΩ 1% 0.6W
4901	4822 051 20008	Jumper 0805
4903	4822 051 20008	Jumper 0805

Top Control Panel [E]

Various

0053	3104 308 10551	TC assy knob R LCD 30"
0055	3104 308 10561	TC assy knob L LCD 30"
0057	3104 304 25831	TC frame LCD 30"
0058	3104 308 10571	TC assy knob M LCD 30"
0345	4822 267 10459	Connector 3p
1701	2422 128 02778	Tact switch
1702	2422 128 02778	Tact switch
1703	2422 128 02778	Tact switch
1704	2422 128 02778	Tact switch
1705	2422 128 02778	Tact switch
8345	3104 311 07211	Cable 3P/560/3P



3001	4822 051 20391	390Ω 5% 0.1W
3003	4822 117 13528	200Ω 1% 0.125W 0805
3005	4822 117 11951	2kΩ 1% 0.1W
3009	4822 117 11534	1.1kΩ 1% 0.1W
3011	4822 117 10845	620Ω 1% 0.1W
3999	4822 051 20471	470Ω 5% 0.1W
9001	4822 051 20008	Jumper 0805
9003	4822 051 20008	Jumper 0805
9005	4822 051 20008	Jumper 0805
9006	4822 051 20008	Jumper 0805

LED + Switch Panel [J]

Various

0320	2422 025 16545	Connector 10p m
1101	2422 128 03123	Switch 2p 2pos 30V



2107	4822 124 12095	100μF 20% 16V
2120	3198 030 71090	10μF 20% 35V
2126	4822 126 14583	470nF 10% 16V 0805



3101	4822 051 30151	150Ω 5% 0.062W
3103	4822 051 30331	330Ω 5% 0.062W
3105	4822 051 30681	680Ω 5% 0.062W
3106	4822 051 30151	150Ω 5% 0.062W
3107	4822 051 30471	47Ω 5% 0.062W
3108	4822 051 30103	10kΩ 5% 0.062W
3109	4822 051 30101	100Ω 5% 0.062W
3120	4822 051 30472	4.7Ω 5% 0.062W
3121	4822 051 30103	10kΩ 5% 0.062W
3122	4822 051 30332	3.3Ω 5% 0.062W
3123	4822 051 30332	3.3Ω 5% 0.062W
3124	4822 051 30102	1kΩ 5% 0.062W
3126	2322 702 60335	3.3MΩ 5% 0.603
3127	2322 702 60335	3.3MΩ 5% 0.603
3128	4822 051 30472	4.7Ω 5% 0.062W
4101	4822 051 30008	Jumper 0603
4107	4822 051 30008	Jumper 0603
4108	4822 051 30008	Jumper 0603
4111	4822 051 30008	Jumper 0603

5100	2422 549 43769	Bead 30Ω 100MHz
6101	4822 130 11564	UDZ3.9B
6103	4822 130 83915	TLMV3100
6105	4822 130 11564	UDZ3.9B
6127	9322 140 63685	TEMD5000
7103	3198 010 42320	BC857BW
7105	3198 010 42320	BC857BW
7107	9322 206 81667	TSOP34836YA1
7120	5322 209 82941	LM358D

Stand-by Audio Panel [SA]

Various

1304	2422 025 10647	Connector 4p m
1305	4822 267 10735	Connector 3p
1306	2422 025 16374	Connector 2p m
1307	2422 025 10647	Connector 4p m
1309	2422 025 11143	Connector 3p m
1312	2422 025 18166	Connector 16p m
1313	2422 025 18166	Connector 16p m
1317	2422 025 10772	Connector 12p m
1735	2422 025 10768	Connector 3p m
1735	4822 267 10918	Connector 3P
1736	2422 025 10768	Connector 3p m
1739	2422 025 10769	Connector 9p m
1M02	2422 025 11244	Connector 7p m
1M03	2422 025 10771	Connector 10p m
1M10	2422 025 09406	Connector 4p m
1M46	2422 025 10655	Connector 11p m

2101	4822 121 51598	2.2nF 5% 400V
2102	4822 124 40207	100μF 20% 25V
2103	2020 552 94427	100pF 5% 50V
2105	2020 552 94427	100pF 5% 50V
2107	2020 024 90718	10μF 20% 450V
2108	2020 024 90718	10μF 20% 450V
2109	2022 552 05679	1μF 10% 16V 0805
2110	2022 552 05679	1μF 10% 16V 0805
2111	4822 121 43526	47nF 5% 250V
2112	5322 126 11583	10nF 10% 50V 0603
2123	2238 586 59812	100nF 20% 50V 0603
2124	4822 124 40248	10μF 20% 63V
2129	5322 126 11578	1nF 10% 50V 0603
2131	2238 586 15641	22nF 10% 50V 0603
2132	4822 124 40207	100μF 20% 25V
2140	4822 124 40248	10μF 20% 63V
2141	4822 126 14583	470nF 10% 16V 0805
2144	2022 552 05679	1μF 10% 16V 0805
2145	4822 126 13881	470pF 5% 50V
2149	2022 552 05679	1μF 10% 16V 0805
2150	4822 124 12379	220μF 25V
2152	4822 121 70162	10nF 5% 400V
2153	5322 126 11582	6.8nF 10% 63V
2154	3198 017 31530	15nF 20% 50V 0603
2160	4822 124 21913	1μF 20% 63V
2163	4822 124 40207	100μF 20% 25V
2506▲	2252 811 95017	470pF 10% 250V
2507	4822 126 13682	100pF 5% 1kV
2508	4822 124 40764	22μF 100V
2510	2020 021 91668	2200μF 20% 10V
2511	4822 124 12379	220μF 25V
2513	4822 126 10206	2.2nF 10% 500V
2515	4822 126 14238	2.2nF 50V 0603
2533	4822 124 40207	100μF 20% 25V
2534	2022 552 05679	1μF 10% 16V 0805
2535	5322 126 11583	10nF 10% 50V 0603
2536	5322 126 11583	10nF 10% 50V 0603
2537	4822 126 14238	2.2nF 50V 0603
2538	5322 126 11583	10nF 10% 50V 0603
2539	2022 552 05679	1μF 10% 16V 0805
2540	5322 126 11583	10nF 10% 50V 0603
2544	5322 126 11583	10nF 10% 50V 0603
2701	4822 124 12379	220μF 25V
2702	5322 126 11578	1nF 10% 50V 0603
2704	5322 126 11578	1nF 10% 50V 0603
2705	2020 552 96684	470nF 10% 25V 0805
2706	2222 580 15649	100nF 10% 50V 0805
2707	4822 126 14585	100nF 10% 0805 50V

2708	2020 552 96326	220nF 10% 16V
2709	4822 126 13881	470pF 5% 50V
2710	4822 126 13881	470pF 5% 50V
2711	5322 126 11578	1nF 10% 50V 0603
2712	2020 552 96683	220nF 10% 50V
2713	2020 552 96684	470nF 10% 25V 0805
2714	3198 017 33330	33nF 20% 16V 0603
2715	5322 126 11578	1nF 10% 50V 0603
2716	4822 126 14241	330pF 0603 50V
2717	5322 121 42498	680nF 5% 63V
2718	4822 122 33761	22pF 5% 50V
2719	5322 126 11578	1nF 10% 50V 0603
2720	2020 552 96326	220nF 10% 16V
2721	4822 126 13881	470pF 5% 50V
2722	4822 126 13881	470pF 5% 50V
2725	2020 552 94427	100pF 5% 50V
2726	3198 017 33330	33nF 20% 16V 0603
2727	5322 126 11578	1nF 10% 50V 0603
2728	4822 126 14241	330pF 0603 50V
2729	5322 121 42498	680nF 5% 63V
2764	4822 126 14491	2.2μF 10V 0805
2766	4822 126 14491	2.2μF 10V 0805
2768	4822 124 40255	100μF 20% 63V
2769	4822 124 40255	100μF 20% 63V
2777	2020 552 96683	220nF 10% 50V
2778	4822 124 40769	4.7μF 20% 100V
2779	2020 552 96683	220nF 10% 50V
2780	2020 552 96683	220nF 10% 50V
2781	2020 552 96683	220nF 10% 50V
2783	4822 124 41751	47μF 20% 50V
2786	2238 586 15641	22nF 10% 50V 0603
2788	4822 124 40255	100μF 20% 63V
2789	2020 552 96683	220nF 10% 50V
2790	4822 124 40255	100μF 20% 63V

-WW-

3100	4822 051 30101	100Ω 5% 0.062W
3101	4822 053 20475	4.7MΩ 5% 0.25W
3102	2312 915 11002	1kΩ 1% 0.5W
3103	2312 915 11002	1kΩ 1% 0.5W
3104	4822 051 30479	47Ω 5% 0.062W
3105	4822 051 30221	220Ω 5% 0.062W
3106	4822 051 30391	390Ω 5% 0.062W
3107	4822 051 30391	390Ω 5% 0.062W
3108	4822 053 10478	4.7Ω 5% 1W
3109	4822 051 30391	390Ω 5% 0.062W
3110	4822 051 30391	390Ω 5% 0.062W
3111	4822 053 10152	1.5kΩ 5% 1W
3112	4822 051 30391	390Ω 5% 0.062W
3113	4822 117 12139	22Ω 5% 0.062W
3114	4822 051 30221	220Ω 5% 0.062W
3117	4822 051 30479	47Ω 5% 0.062W
3122	4822 051 30471	47Ω 5% 0.062W
3123	4822 051 30109	10Ω 5% 0.062W
3124	4822 051 30339	33Ω 5% 0.062W
3125	4822 117 12971	15Ω 5% 0.063 0.62W
3126	4822 051 30103	10kΩ 5% 0.062W
3127	4822 051 30562	5.6kΩ 5% 0.063W 0603
3128	4822 117 13608	4.7Ω 5% 0.063 0.62W
3132	4822 051 30333	33kΩ 5% 0.062W
3134	4822 051 30102	1kΩ 5% 0.062W
3135	4822 051 30331	330Ω 5% 0.062W
3138	4822 051 30105	1MΩ 5% 0.062W
3140	4822 051 30223	22kΩ 5% 0.062W
3141	4822 051 30471	47Ω 5% 0.062W
3142	4822 051 30123	12kΩ 5% 0.1W
3145	4822 051 30472	4.7Ω 5% 0.062W
3146	4822 051 30479	47Ω 5% 0.062W
3147	4822 051 30223	22kΩ 5% 0.062W
3148	4822 051 30479	47Ω 5% 0.062W
3149	4822 051 30103	10kΩ 5% 0.062W
3150	4822 051 30101	100Ω 5% 0.062W
3152	4822 051 30102	1kΩ 5% 0.062W
3153	4822 051 30223	22kΩ 5% 0.062W
3155	4822 050 21003	10kΩ 1% 0.6W
3156	4822 051 30102	1kΩ 5% 0.062W
3157	4822 051 30223	22kΩ 5% 0.062W
3158	4822 051 30479	47Ω 5% 0.062W
3159	4822 051 30479	47Ω 5% 0.062W
3160	4822 051 30102	1kΩ 5% 0.062W
3161	4822 051 30123	12kΩ 5% 0.1W
3171	4822 051 30101	100Ω 5% 0.062W
3172	4822 051 30333	33kΩ 5% 0.062W
3175	4822 051 30103	10kΩ 5% 0.062W
3176	4822 051 30103	10kΩ 5% 0.062W
3509	4822 053 10222	2.2kΩ 5% 1W
3511	4822 051 30683	68kΩ 5% 0.062W
3512	4822 051 30471	47Ω 5% 0.062W
3513	4822 051 30333	33kΩ 5% 0.062W
3515	4822 117 13632	100kΩ 1% 0.603 0.62W
3516	4822 051 30472	4.7Ω 5% 0.062W
3517	4822 051 30223	22kΩ 5% 0.062W

3528	4822 051 30472	4.7Ω 5% 0.062W
3529	4822 051 30101	100Ω 5% 0.062W
3530	4822 051 30223	22kΩ 5% 0.062W
3531	4822 051 30153	15kΩ 5% 0.062W
3532	4822 051 30472	4.7Ω 5% 0.062W
3533	4822 051 30152	1.5Ω 5% 0.062W
3534	4822 051 30103	10kΩ 5% 0.062W
3535	4822 051 30222	2.2kΩ 5% 0.062W
3536	4822 051 30103	10kΩ 5% 0.062W
3538	4822 051 30101	100Ω 5% 0.062W
3539	4822 051 30471	47Ω 5% 0.062W
3540	4822 051 30222	2.2kΩ 5% 0.062W
3541	4822 051 30222	2.2kΩ 5% 0.062W
3542	4822 051 30103	10kΩ 5% 0.062W
3544	4822 051 30221	220Ω 5% 0.062W
3560	4822 051 30682	6.8Ω 5% 0.062W
3561	4822 051 30392	3.9Ω 5% 0.063W 0603
3562	4822 117 13608	4.7Ω 5% 0.063 0.62W
3701	4822 051 30103	10kΩ 5% 0.062W
3702	4822 051 30682	6.8Ω 5% 0.062W
3703	4822 051 30333	33kΩ 5% 0.062W
3704	4822 117 10833	10kΩ 1% 0.1W
3705	4822 051 20828	8.2Ω 5% 0.1W
3706	4822 051 30472	4.7Ω 5% 0.062W
3707	4822 051 30683	68kΩ 5% 0.062W
3708	4822 051 30563	56kΩ 5% 0.062W
3709	4822 117 11503	220Ω 1% 0.1W
3710	4822 051 30223	22kΩ 5% 0.062W
3711	4822 050 21204	120kΩ 1% 0.6W
3712	4822 051 30103	10kΩ 5% 0.062W
3713	2312 915 11202	1.2kΩ 1% 0.5W
3714	4822 117 12925	47kΩ 1% 0.063W 0603
3715	4822 117 12925	47kΩ 1% 0.063W 0603
3716	4822 117 12925	47kΩ 1% 0.063W 0603
3717	4822 117 13632	100kΩ 1% 0.063 0.62W
3718	4822 117 13632	100kΩ 1% 0.063 0.62W
3721	4822 051 30472	4.7Ω 5% 0.062W
3722	4822 051 30683	68kΩ 5% 0.062W
3723	4822 051 30563	56kΩ 5% 0.062W
3724	4822 117 11503	220Ω 1% 0.1W
3725	4822 051 30223	22kΩ 5% 0.062W
3726	4822 117 11503	220Ω 1% 0.1W
3727	4822 117 11503	220Ω 1% 0.1W
3743	4822 117 11449	2.2kΩ 5% 0.1W 0805
3746	4822 051 30223	22kΩ 5% 0.062W
3747	4822 050 24703	47kΩ 1% 0.6W
3747	4822 117 12925	47kΩ 1% 0.063W 0603
3748	4822 051 30471	47Ω 5% 0.062W
3750	4822 117 11449	2.2kΩ 5% 0.1W 0805
3756	4822 117 11449	2.2kΩ 5% 0.1W 0805
3757	4822 117 11449	2.2kΩ 5% 0.1W 0805
3759	4822 051 30332	3.3Ω 5% 0.062W
3760	4822 051 30332	3.3Ω 5% 0.062W
3761	4822 051 10102	1kΩ 2% 0.25W
3761	4822 051 20109	10Ω 5% 0.1W
3762	4822 051 30222	2.2kΩ 5% 0.062W
3763	4822 051 30222	2.2kΩ 5% 0.062W
3764	4822 051 10102	1kΩ 2% 0.25W
3764	4822 051 20109	10Ω 5% 0.1W
3765	4822 051 30103	10kΩ 5% 0.062W
3765	4822 117 13632	100kΩ 1% 0.063 0.62W
3766	4822 051 30103	10kΩ 5% 0.062W
3766	4822 117 13632	100kΩ 1% 0.063 0.62W
3767	4822 051 30103	10kΩ 5% 0.062W
3767	4822 117 13632	100kΩ 1% 0.063 0.62W
3768	4822 051 30103	10kΩ 5% 0.062W
3768	4822 117 13632	100kΩ 1% 0.063 0.62W
3790	4822 051 30222	2.2kΩ 5% 0.062W
3790	4822 051 30682	6.8Ω 5% 0.062W
3791	4822 051 30222	2.2kΩ 5% 0.062W
3791	4822 051 30682	6.8Ω 5% 0.062W
3792	4822 051 30153	15kΩ 5% 0.062W
3792	4822 051 30183	18kΩ 5% 0.062W
3793	4822 051 30153	15kΩ 5% 0.062W
3793	4822 051 30183	18kΩ 5% 0.062W
3798	4822 051 30153	15kΩ 5% 0.062W
3999	4822 051 30472	4.7Ω 5% 0.062W
9020	4822 051 30008	Jumper 0603
9717	4822 051 30008	Jumper 0603
9737	4822 051 30008	Jumper 0603

5506	4822 157 11411	Bead 100MHz
5507	2422 536 00433	15μH 10%
5701	2422 536 00385	68μH 10%
5702	2422 536 00385	68μH 10%
5703	4822 157 11716	Bead 30Ω at 100MHz
5705	4822 157 11716	Bead 30Ω at 100MHz
5707	4822 157 11411	Bead 100MHz
5708	4822 157 11411	Bead 100MHz
5711	4822 157 11411	Bead 100MHz
5712	4822 157 11411	Bead 100MHz
5730	2422 549 00112	Line filt. 50V 3A
5731	2422 549 00112	Line filt. 50V 3A



6103	4822 130 10871	SBYV27-200
6104	9340 548 69115	PDZ27B
6105	4822 130 11522	UDZ15B
6106	9340 548 66115	PDZ20B
6108	4822 130 80622	BAT54
6114	4822 130 10871	SBYV27-200
6115	4822 130 80622	BAT54
6116	3198 020 55680	BZX384-C5V6
6120	4822 130 11397	BAS316
6121	4822 130 11397	BAS316
6122	9322 129 34685	BZM55-C3V9
6130	9340 548 61115	PDZ12B
6132	4822 130 11416	PDZ6.8B
6133	4822 130 11397	BAS316
6134	4822 130 11397	BAS316
6140	4822 130 41487	BYV95C
6142	4822 130 80622	BAT54
6144	4822 130 11397	BAS316
6147	9322 200 23685	SML4736
6148	4822 130 11397	BAS316
6149	3198 020 55680	BZX384-C5V6
6150	9340 292 50135	BZG03-C200
6151	9340 548 71115	PDZ33B
6153	9340 292 50135	BZG03-C200
6156	4822 130 11397	BAS316
6504	9340 418 70133	BYV27-600
6505	9322 161 78682	SB360L-7024
6511	9340 548 61115	PDZ12B
6531	4822 130 11522	UDZ15B
6532	4822 130 11397	BAS316
6540	4822 130 80622	BAT54
6562	9340 548 67115	PDZ22B
6701	4822 130 11397	BAS316
6702	4822 130 11551	UDZS10B
6703	4822 130 11551	UDZS10B



7100	3198 010 42320	BC857BW
7101	9340 219 30115	BC817-25W
7102	9322 160 34687	FQPF3N60
7102	9322 194 27687	STP3NK60ZFP
7105	3198 010 42320	BC857BW
7131	9340 557 69127	PHX9NQ20T
7140	3198 010 42310	BC847BW
7150▲	9322 149 04682	TCET1102
7501▲	9322 149 04682	TCET1102
7505	3198 010 42320	BC857BW
7506	3198 010 42310	BC847BW
7507	3198 010 42310	BC847BW
7508	3198 010 42310	BC847BW
7509	3198 010 42310	BC847BW
7511	9337 331 10215	BST82
7512	9340 422 80115	PMSTA42
7531	9340 436 50115	BSP030
7532	3198 010 42310	BC847BW
7560	9340 219 30115	BC817-25W
7700	9322 163 86682	TDA7490L
7701	3198 010 42310	BC847BW
7703	3198 010 42310	BC847BW
7704	3198 010 42310	BC847BW
7705	3198 010 42310	BC847BW
7706	3198 010 42320	BC857BW
7707	3198 010 42310	BC847BW
7708	3198 010 42310	BC847BW
7709	3198 010 42310	BC847BW
7710	3198 010 42310	BC847BW
7711	3198 010 42310	BC847BW

11. Revision List

Manual xxxx xxx xxxx.0

- First release.

Manual xxxx xxx xxxx.1

- Chapter 7: To improve the readability, the PWB layout of the SA panel is splitted in two parts.
 - Chapter 8:
 - Default values of White Tone Alignment added.
 - Backlight Voltage Alignment added.
 - Chapter 9: Lip sync description added.
 - Chapter 10: Correct software codenumbers listed.
 - All chapters: small textual and graphical improvements.
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